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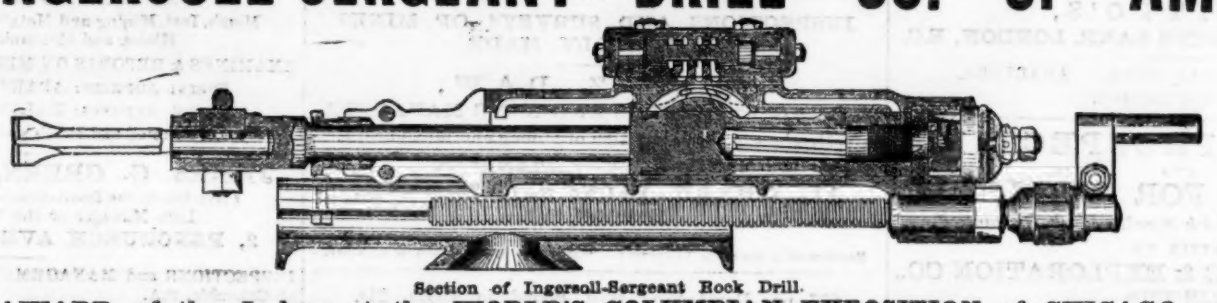

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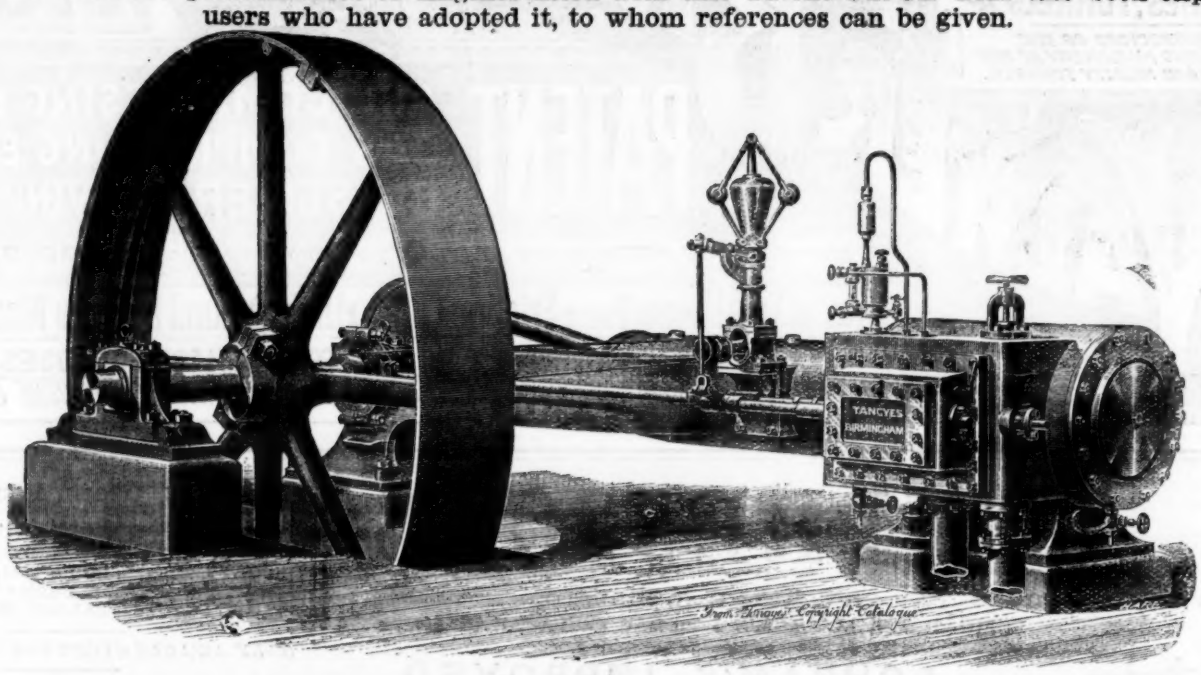

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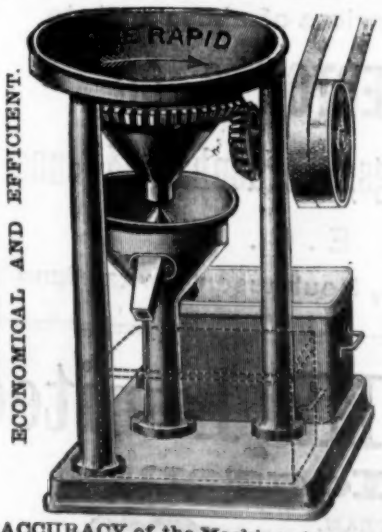

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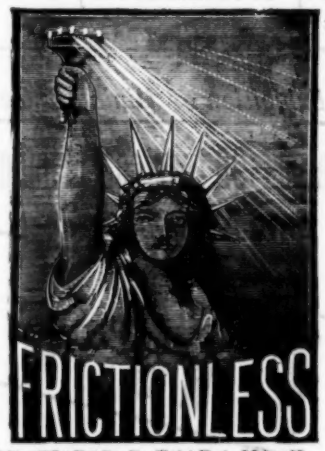

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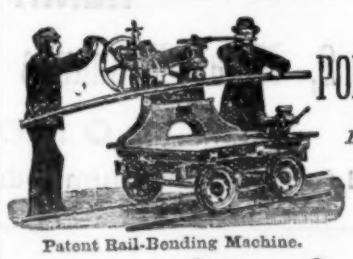

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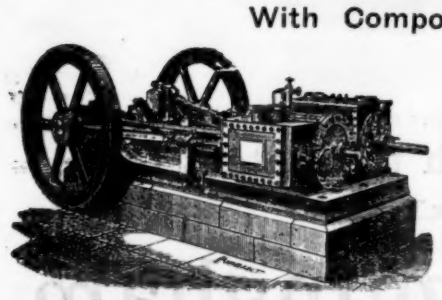

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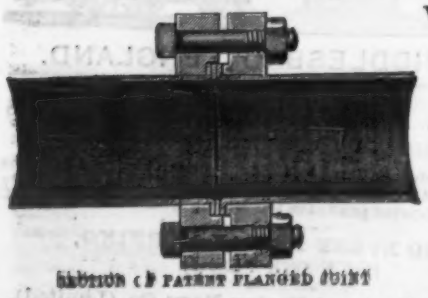
STEEL & IRON PLATES FOR BOILERS, BRIDGES, &c.



SECTION OF PATENT FLANGED JOINT

PLAN OF PATENT FLANGED JOINT.

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ESTABLISHED 1839

Patentees and Sole Makers of

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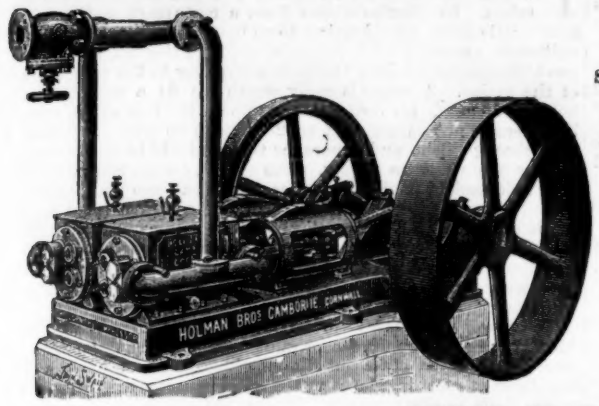


FIRST SILVER MEDAL, Highest Award, Mining Institute Contest, 1881.

Three Makers represented.

FIRST SILVER MEDAL Highest Award, Royal Cornwall Polytechnic Jubilee Exhibition Contest, 1882.

Five Makers represented.

AWARDED SILVER MEDAL INTERNATIONAL INVENTIONS EXHIBITION, 1885.

RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS**, equal to five times the Speed of Hand Labour

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES**, and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

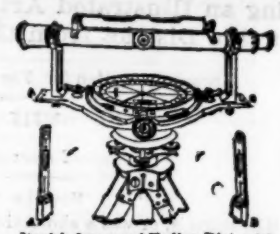
London Representative: Mr. E. M. TOUZEAU, Leadenhall Buildings, London, E.C.

JOHN DAVIS AND SON,

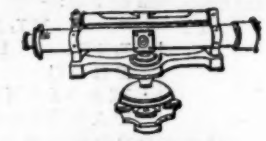
ALL SAINTS WORKS, DERBY;

118, NEWGATE STREET, LONDON.

Transit Theodolite with Patent Hoffman Tripod Head, and Trough Compass.



Davis's Improved Hedley Dial, with Telescope and Sights Interchangeable and Patent Hoffman Tripod Head.



Dumpy Level with Hoffman Patent Tripod Head.

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SECTION (A) MATHEMATICAL DEPARTMENT AND SAFETY LAMPS.

SECTION (B) ELECTRICAL DEPARTMENT.

Gold Medal Awarded Mining Exhibition, 1890.

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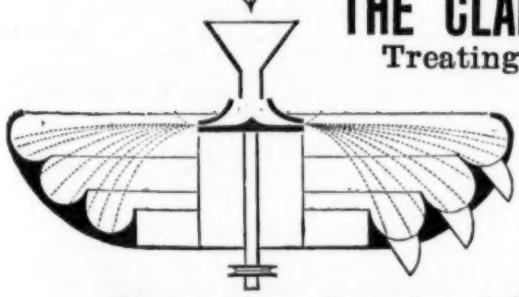

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Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black Lead, &c., graded according to size in one operation.

Terms for Experimental Concentration, and for Supply of Machines on Application.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

5870 William Edward Moss, 128, Crown Street, Liverpool.—Improvements in combined hand and steam steering parts of which are applicable to all classes of steam engines.—March 24.

5874 Daniel Smith, Castle Ironworks, Raglan Street, Wolverhampton.—Improvements in lifting for raising stamp hammers.—March 24.

5877 Philip Mitchelmore, 41, Northumberland Road, Southampton.—Improvements in petroleum and other explosive engines.—March 24.

5880 Oscar Brunler, 233, Friedrichstrasse, Berlin.—Device for injecting the petroleum in four-stroke petroleum engines with two air inlet valves.—March 24.

5886 Theodor Lohnstein, 18, Southampton Buildings, Chancery Lane, London.—An improved float for determining the absolute weight and specific gravity of solid and liquid bodies.—March 24.

589 John Allan, 3, Ludgate Circus Buildings, London.—Improvements in gas engines.—March 24.

5893 William Frederick Beardshaw, 55, Chancery Lane, London.—Improvements in connection with twist drills.—March 24.

5740 Daniel Stewart Birrell, 15, Water Street, Liverpool.—Machinery for making wire chain links.—March 20.

5744 Jeremiah Eugene Mathewson, 21, Northumberland Road, Sheffield.—Improvements in painting surface of iron or steel (Benjamin Chew Tilghman, United States), March 20.

5753 Mathew Moss Withington, near Chelford, Cheshire.—Improvements in pumps.—March 20.

5757 Daniel Lister, 85, Ash Grove, Wavertree, Liverpool.—Self-acting stop gear for rope making machinery.—March 20.

5766 Charles James Brown, 46, Victoria Buildings, Manchester.—Improvements in water heaters for steam boilers and other purposes using exhaust or other steam, and in condensers for steam engines.—March 20.

5773 William George Leatherbarrow and Joseph Bispham Leatherbarrow, 13, Lily Street, Urmston, near Manchester.—The one handed spring wrench.—March 20.

5776 John Prentice, 73, Wellington Street, Glasgow.—Improvements in apparatus for governing engines and motors.—March 20.

5787 John Preston, Stewage House, Deptford, London.—Relating to an improved method of staying combustion chambers.—March 20.

5797 William Sellar, 33, Chancery Lane, London.—Improvements in or connected with tools or appliances for breaking up coal or other minerals; applicable also to other purposes.—March 20.

5804 Louis Irving Seymour, 55, Chancery Lane, London.—Improvements in steam boilers.—March 20.

5815 Alfred Buckingham Ibbotson, 45, Southampton Buildings, Chancery Lane, London.—Improvements relating to locknuts and to bolts for use therewith.—March 20.

5827 Richard Pearson, 5?, Chancery Lane, London.—An improvement in turbines or water wheels.

5843 Joseph Pickles Binns and Henry Greenwood Binns, 31, Cavendish Terrace, West Hill Park, Halifax.—Improvements in gas and oil engines.—March 20.

SPECIFICATIONS PUBLISHED.

4696, Davy, gas, &c., engines; 7663, Haig, paddle wheels for vessels; 7318, Walwork, ore grinding mills, &c.; 8146, Keith, hot water boilers; 8414, Jones, and others, belts for driving, elevating, &c.; 6794, Booth, governing steam engine, 9224, Hill (Hill), brazing metals; 9370, Maggins, steam boilers; 14,730, Glass, hydraulic lifts, &c.; 17,765, Brandon, packing piston rods, &c.

The above specifications published may be had of Messrs. Rayner and Company, 37, Chancery Lane, London, at 10d. each including postage.

CONTRACTS OPEN:

FOR MINE, QUARRY, RAILWAY, AND ENGINEERING WORK, STORES, &c.

*** We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Steam Coal. April 9 (*Cheshunt*).—For the supply of 309 tons of best hard, hand-picked steam coal, for the Cheshunt Local Board. Particulars and conditions of contract may be seen at the office of the engineer to the board, Mr. S. Towlson, Turner's Hill, Cheshunt.

Sleepers. April 10 (*London, W.*).—For the supply of about 30,000 creosoted sleepers, 250,000 clean sleepers and 2000 loads of rectangular Baltic redwood crossing timber, for the Great Western Railway Company. Specifications with forms of tender to be obtained of the secretary, Paddington Station, and the stores superintendent, Swindon.

Concrete Tank, April 10 (*Chipping Norton*).—For the completion of a concrete tank, about 40 yards by 15 yards by 6 yards deep, required for the water supply to the town of Chipping Norton, in accordance with plan and specification prepared by Mr. G. P. Mace, borough surveyor, which may be inspected, and full particulars obtained at the office of Mr. Thomas Mace, town clerk, Chipping Norton. Tenders for the above, addressed to the Water Supply Committee, Town Clerk's Office, Chipping Norton.

Mains, April 10 (*Ilkley*).—For the supply of hydraulic mains, foul mains, and resort fittings for 10 retorts, for the Ilkley Local Board. Particulars at the Gas Office, Ilkley.

Cast Iron Pipes, April 17 (*Heywood*).—For the supply of about 450 yards each of 3 inch and 4 inch cast iron pipes and specials, for the Gas Committee. Specifications and forms of tender to be obtained on application to Mr. W. Whatmough, gas manager.

Railway Construction, April 18 (*North Blyth*).—For the construction of railways at Cambois, and coal-shipping staiths at North Blyth, for the North Eastern Railway Company. Plans and specifications to be seen at the office of Mr. Charles A. Harrison, the company's engineer, Central Station, Newcastle-on-Tyne, on and after April 2.

Sinking Pits (*Aberbeeg, Mon.*).—For the sinking of two pits near Aberbeeg, Monmouthshire, to the steam coal measures. For particulars apply to Messrs. John Lancaster and Co. (Limited), Blaina, Mon.

Sluice Valve, (*Manchester*).—For the supply of one 24-inch sluice valve for the Waterworks Committee. Plans and specifications on application to Mr. T. H. G Berrey, Waterworks office, Town Hall, Manchester.

Stores, (*Glasgow*).—For the supply of stores for one year from April 1, for the Pumpherston Oil Company (Limited), 24, St. Vincent Place, Glasgow. Specifications and forms of tender on application at the office.

Driving Stone Drift, (*Achlington*).—For driving a stone drift 150 yards long. For full particulars apply to the Manager, Broomhill Colliery, Achlington.

Construction of Railway (*Madrid*).—The Secretary of State for Foreign Affairs has received from Her Majesty's Ambassador at Madrid, a copy of a royal decree, inviting tenders for the construction of a railway from Manila to Tasi by Calamba and Batangas. The decree can be seen at the Foreign Office, S.W., on a week-days between 11 and 4.

Aqueduct (*Birmingham*).—For the construction of about 10½ miles of the aqueduct, from Dolau to Knighton, in the county of Radnor, including the Dolau Tunnel 4¼ miles long, and the Knighton Tunnel 2¼ miles long, for the Corporation of Birmingham. The drawings may be seen and specifications and bills of quantities obtained at the office of the engineer, Mr. James Mansergh, 5, Victoria Street, Westminster, on deposit of cheque or bank-note for £10, which will be returned after the receipt of a *bona fide* tender, with the bills of quantities fully priced out.

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future be answered in this column and not through the medium of the post. All questions and replies should be accompanied by the name and address of the writer.

REPLIES.

L. J.—No.

J. K.—Thanks for circular.

ANXIOUS.—We regret we cannot recommend the investment.

READER (C).—They are not paying interest at the moment.

J. M.—It is an exceptionally good investment.

VEX.—The London offices are at Mansion House Chambers, E.C.

FRIEND.—There is very little market for the shares.

AUSTRALIAN.—You will find "The Discovery of Australia," by A. F. Calvert, F.R.G.S. (*The Mining Journal*, offices, 18, Finch Lane), contains the desired information.

E. C.—Communicate with the secretary.

G. R.—1. The firm has ceased to exist.—2. We think you will experience great difficulty.

NEMO.—Sell.

UNREMUNERATIVE.—You could apply to the Court to have the concern wound up.

THE MINERS' CONCILIATION BOARD.—The first full meeting of the Miners' Conciliation Board took place on Tuesday in St. Martin's Town Hall. Lord Shand, the arbitrator, presided over a meeting consisting of 14 representative masters and an equal number of selected miners. The meeting was held for the purpose of drawing up regulations to govern the future proceedings of the board.—The Chairman, in a well-judged speech, breathing throughout a spirit of conciliation, pointed out to the members the tremendous importance attaching to their task, and said that the formation of the board was largely an experiment—an experiment which was being watched with interest—not only by English people but by foreign nations also. Were failure to attend it the fact would come as a great humiliation to the board, himself, and the nation at large. Speeches concurring in the sentiments of the Chairman's address were made from both sides, and after a prolonged discussion 15 rules were agreed upon, and these, it is believed, will meet all possible contingencies in the future should the masters wish to reduce wages, or the men demand an increase, then notice must be given by either party to the officials of the board, by whom the necessary steps will be taken for summoning the board to meet to discuss the matter in dispute. If the board when it meets cannot agree, then Lord Shand is to be summoned to meet them, and he will act as arbitrator. The next move will probably be on the part of the masters, who will give notice for a reduction of wages, and then the efficacy of the board to intervene and prevent a disastrous strike will be fully tested.

THE MINERAL WEALTH OF HUELVA.

Being an Illustrated Article on the History of this District from the earliest times.

[Specially written for *The Mining Journal.*]

VIII.

(*Continued from page* 311).

The Seville Stone.

THIS stone is, or was a short time ago, in the garden of the building known at Seville as the House of Pontius Pilate. According to trustworthy record it was found in that City, and the inscription on it is :—

T. FLAVIO. AUG
LIB. POLYCRYSO
PROC. MONTIS
MARIANI PRAES
TANTISSVMO
CONFECTORES. AERIS

This has been translated thus :—

"The copper smelter" dedicate this statue "to the highly appreciated" "Titus Flavius Polaicrysus, freedman of the Emperor and Procurator of the Montes Mariain."

It has been maintained that the words "confectores aeris" should be translated, "workers in copper," rather than "copper smelters," and again it is supposed that the "coiners of copper" are referred to. However, be this as it may, we must accept it that this dedication refers to one who had jurisdiction in some of the Huelva mines, as a great part of the district where they occur is admitted to have formed part of the "Montes Mariain." It is a great pity that no clue as to its date can be obtained from the inscription. However, we can deduce from it that Seville was in all probability not only the commercial centre, but also the outlet for the industries of this locality; indeed, the convergence of old Roman roads on Seville or Italica make this clear in another way.

The Rio Tinto Tablet.

The southern lode of the Rio Tinto Mines is nearly 2 miles long, and it was pierced by Roman adits at its western end, near its middle, and at the extreme eastern end. In the year 1772 those at the eastern end of the lode were first cleaned out in modern times, and at a distance of about 125 yards from the mouth of the lower one was found a copper plate or tablet, set in a frame on the side wall. It is about 3 feet long by 2 feet broad, and rather less than ½ inch thick. On it is inscribed the following :—

IMP. NERVAE CAESARI AUG
PONTICIFICI MAXIMO TR
POTEST · P · P · COS · III
design. IIII · PVDENS · AVG · LIB.
PROCVRATOR
de suO · POSVIT

This tablet is preserved in the Archæological Museum of Madrid. From its inscription we gather that it was erected in the reign of Nerva by the "Procurator" Pudens, a freedman of the Emperor, and it is generally accepted that this fixes A.D. 97 as the year in which this particular adit or tunnel was started.

The Aljustrel Tablet.

This tablet, which is made of a sheet of bronze about 30 inches high by 20 inches wide, and ¼ of an inch thick, was found in May, 1876, in an ancient slag-heap at the Algares Mine, not far from Aljustrel, in Portugal—that is to say, at the western extremity of the mining district with which we are dealing. The sheet thus found formed one of several others, on which were written in Latin what may be called the laws regulating the mining district of Vipasca (the Roman name for the district of Vipasca). It was engraven first of all on what is at present the back, and, evidently getting broken, had a fresh patch soldered on to one edge. Afterwards it was re-engraved on what is now the proper face, and this is represented in Fig. 5. Owing to this double engraving not only have some indistinct letters and words been unravelled, but seven whole lines have been added to the inscription.

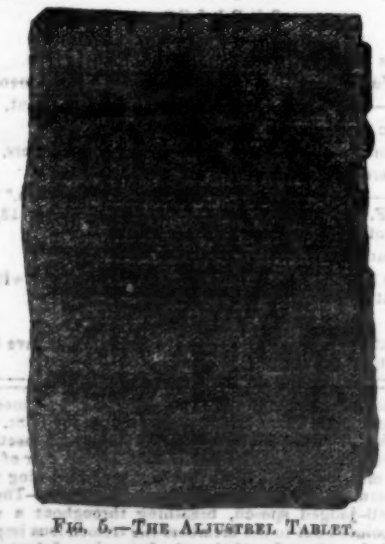

Fig. 5.—The Aljustrel Tablet.

The whole has now been translated into several European languages, the honour of being the first to decipher it being disputed between the Portuguese "savants," Soromenho and Estacio da Veiga. The text in Fig. 5 is sufficiently large to allow any one so minded to read it, and being produced from a photograph it gives quite a true representation of the right side of the tablet.

Two points about it tend to show its age :—First, the tax of 1 per cent. referred to in it is known to have been created by Augustus, therefore we must fix for it a date posterior to his reign. Secondly, the form of the letters has enabled experts to select the middle of the first century of the Christian era as the time when it was engraved. Even a cursory glance by an unexperienced eye will detect such peculiarities as the raising of the transverse strokes of the letters A, M and N, thus A, M and N. The four Roman coins mentioned in it had approximately the following values at that time :—1 denarius=10 pence, 1 sestertius=2½ pence, 1 as=0·60 penny, 1 semis=0·30 penny.

The insight which this tablet gives us of the general life in a Roman mining district is rarely most curious, and as an extract of its contents could scarcely be deemed satisfactory, we give the following translation, even at the expense of being considered prolix :—

As to the 1 per cent. on sales at auctions it will be remembered that the gathering of all taxes was farmed out or let to the publicans or syndicates of publicans.

The lessee shall receive from the seller 1 per cent. on all sales at auctions within the territory of the mines of Vipasca, excepting in the case of those auctions carried out by the Procurator of the mines at the special order of the Emperor.

The lessee shall receive from the purchaser 1 per cent. on the price of the shafts that may be sold by the Procurator of the mines.

If a quantity of goods be put up to auction, and all of them be (not) * knocked down, the seller will pay the 1 per cent. just the same to the lessee, his partner, or representative. †

If the lessee should desire the purchaser to pay the auction fees he must do so.

The lessee shall also receive 1 per cent. on anything that may be withdrawn from an auction.

If after unsuccessfully announcing the sale of goods by means of the Town Crier they should be sold within 10 days of announcement, on the same conditions, the owner must, all the same, pay the 1 per cent. to the lessee.

If what is owing to the lessee in virtue of this chapter is not liquidated and paid up within the third day of its becoming due, it will have to be paid double.

As to the leasing of the office of Public Crier :—

He who leases this office will supply the Public Crier of the district.

In payment he may exact 2 per cent. of what may be sold up to the value of 100 denarii or less, and 1 per cent. on what may be sold of a higher value than 100 denarii.

He who may sell slaves through the intervention of the Public Crier, if they number five or less, must pay the lessee the sum of . . . . per head; but if he should sell a greater number, then he will pay only 3 denarii per head.

If the Procurator of the mines, acting for the Treasury, should sell or mark out anything, the lessee must supply the Public Crier.

He who may advertise a list of articles for sale must pay the lessee one denarius.

The purchaser of the shafts which the Procurator of the mines may sell must pay one per cent., and if he should not pay it within the third day he must pay double.

It is lawful for the lessee to seize some articles as security.

He who may sell by means of the Public Crier, mules, donkeys, or horses, must pay three denarii per head.

He who may announce slaves or other effects for sale by means of the Public Crier, and should afterwards sell them by auction under similar conditions, within 30 days, must pay the lessee all the same.

As to the Baths :—

The lessee of the baths must daily, from the 1st July next, heat at his cost those that he may have leased, having them ready for women from daybreak till 1 P.M., and for men from 2 P.M. till 8 P.M., in accordance with the ideas of the Procurator who may be in charge of the mines.

Water must be supplied up to the highest mark in the warm baths, and in the cold ones, either for women or men, it must flow freely.

The lessee can make each man pay half an as, and each woman one as.

Exception is not to those imperial freedmen and slaves who may be employed by the Procurator, or are in receipt of aliment, and also children and soldiers.

On the expiry of the lease the lessee must return in perfect state of repair the effects and furniture of the baths that may have been handed over to him, allowance being made for natural wear and tear during the time.

Every 30 days he must wash, clean, and completely smear with fresh grease the copper utensils he may use.

If through causes beyond his control the regular use of the baths should be impeded at any time, the lessee may deduct from his payment the part proportional to the said time.

If the suspension of the baths were necessary for the cleaning up of the copper utensils or for any other reason caused by their regular use, the lessee must make no deduction.

The lessee is allowed to sell no firewood except such refuse of the branches as may not be suited for heating purposes, and if he should disobey the order he must pay the treasury 100 sestertii for each cartload.

If the baths are not properly provided, the Procurator of the mines may impose a fine of 200 sestertii for every time he may find them not properly arranged.

The lessee will have a reserve of firewood sufficient for 30 (?) days.

As to the Shoemakers :—

He who should make boots or throngs such as are usually made by shoemakers, or should put nails in the soldier's shoes, or should be convicted of having sold within this district any other thing which the shoemakers sell, he will have to pay double its value to the lessee.

The lessee must sell nails in accordance with the chapter relating to iron.

The lessee may seize some article in security.

No one is allowed to repair boots, exception being made to those who repair their own.

The lessee must supply all sorts of boots and shoes, but if he should not do so, everyone will have the right to purchase them where he pleases.

As to the Barbers :—

The lessee of this trade must have the advantage of no one else practising it for pay in the village or territory of Vipasca, and he who should do so in contravention of this order must pay the lessee . . . denarii for each time he may use his implements, and the said implements will be forfeited to the lessee.

Exception is made in the case of such slaves as may operate on their masters or fellow-slaves.

No travelling barbers, except such as the lessee may send, have a right to shave or cut the hair. The lessee has the right to seize some articles as security, and he who would prevent him must pay five denarii for each offence.

The lessee must supply one or more suitable artizans.

As to the Public Washing Places :—

No one is allowed to receive pay for cleaning dirty or used clothes, excepting such as to whom the lessee may have conceded or sublet this industry, and he who may be convicted of contravening this order must pay the lessee three denarii for each piece forming a garment.

The lessee may seize an article as security.

* The word "not" seems to be missing in the original.

† The partners and representatives of the lessees are generally referred to along with the lessee himself, but we will not mention them further.

(*To be continued*).

MINING IN MEXICO.

THE NATIVE MINERS.

BY J. HOWARD PALMER, B.A.

IN previous articles some account has been given of the inside of a Mexican mine, we have now to depict the miners themselves. In Mexico miners form a caste apart and a very aristocratic caste, too—looking down upon rancheros and agriculturists generally with fine contempt. After all, they have good reasons for thinking themselves superior to the cultivators of the plains. A miner is easily worth his $1 a day, besides being very much his own master, whereas the best agricultural labourers do not earn more than 25 cents, if so much, per diem, and through debt and ignorance they are still in a condition not far removed from slavery. The miners, on the contrary, are very independent, and a foreigner has to exercise considerable tact if he means to get on with them. The Mexicans are very proud and sensitive in many ways, and an angry word or an ill-judged rebuke is often quite enough to make a good man leave his work; on the other hand, with those who can combine kindness with authority they are the best of workmen, steady, courteous, and intelligent.

There are three classes of labour employed underground in Mexico—miners proper, faeneros, or unskilled labourers, whose business it is to clear out the workings after a blast, and tenateros, or packers, who carry the roughly sorted ore, and waste to the shaft or adit tramway. The skilled miners work in gangs of eight men each, and are paid by contract. Each gang has a captain who alone is responsible to the engineer of the mine. These contractors have to buy their dynamite, candles, &c., from the mine stores, but they are provided with drills, which are weighed at intervals, and the wear charged against the gang. A drift 2 metres by 2 will cost about $20 to $40 per metre, but the contractors are not expected to remove the broken rock. This is done by the faeneros who work on day wages of 50 to 75 cents; these men also sort the ore roughly, clean out the workings, and put the stone ready for the tenateros, who sack it up and carry it to the shaft. These tenateros are paid so much per sack according to the weight and distance traversed. They can carry as much as 150 lbs. at a time up the steepest winzes, and earn from 75 cents to $1 per day. The work is very severe and exhausting, and heart disease and lung trouble are only too rife among them. Ore shoots and tramways in the levels are not used to the extent they should be, and though there is never any difficulty in getting sufficient ore broken down, want of labour often causes much vexatious delay in bringing it to the surface.

A cheaper way of working than the foregoing is to let a mine out in sections to buscones or tributers. Each party has so many feet along the vein or an end to drive. They pay all their expenses, and are entitled to half the ore they bring out. The mine generally buys the buscones' half at a fixed price on the assay value, but they are sometimes allowed to take their ore away on their backs for sale elsewhere. Letting out a mine to buscones is advantageous in the early stages of development, for the Mexicans will make a good living out of a poor vein, where a company cannot even expect to make expenses. In this way a mine can be opened up very cheaply, but these tributers require very careful watching in order to restrain their "burrowing" propensities; as their reward depends entirely upon the ore they bring out, they are not very anxious to do any dead work, or to remove a single stone more than they can help. If they are not properly looked after the result, of course, is a network of narrow, tortuous and dangerous workings, which have to be widened and squared off afterwards at the expense of the mine. Buscones are also employed in those parts of a mine that are nearly worked out, and where it would not pay to set an ordinary contract. They know the ore so well, and are so acute and persevering in following up the narrowest stringers, that they can keep workings in operation long after they would otherwise have to be abandoned, and thus often pave the way for future discoveries.

When the ore reaches the surface a great deal is done to it before it is considered to be ready for the reduction processes. In all the dry ores, the silver-bearing minerals are so finely disseminated throughout the gangue that any system of mechanical concentration is quite out of the question. In Colorado and Montana, where labour is dear, and fuel and crushing power are cheap, all the lode matter goes straight from the mine to the mill without any preliminary sorting, but in Mexico, where cheap skilled labour is abundant and machinery expensive, it does not pay to crush large quantities of waste rock, and hence an elaborate and efficient system of hand picking and sorting is in vogue. Any large lumps of ore are broken up, and the rest is thrown upon an inclined grizzly; with ½-inch mesh to remove the fine stuff or tierras. All that will not pass the grizzly is then washed upon a sloping stone table or lavadero, provided with a tank at the lower edge. This tank is cleaned out from time to time, and the mud collected will often average 40 ounces of silver per ton. The washed ore is then handed over to the sorters or pepenadores, who chip off the worthless portions, and classify the mineral into grades either for shipment or local treatment. All ore containing over 200 ounces of silver per ton is generally sold to the agents of American smelting companies, anything of lower assay value going to the patios. In Guanaquato and Zacatecas the average product of the mines at present is from 20 to 30 ounces of silver, with a varying amount of gold per ton, and it is found that the patio process works best upon ores of this richness. The waste rejected by the sorters should not contain more than 6 or 7 ounces of silver, and this is again picked over upon the dump, so that very little is finally lost. The cost of all this sorting is about $1·50 per ton but considering that the assay value of the ore is generally doubled, and that the waste goes to the dump instead of being crushed, it seems that there is ample justification for this expenditure. In many mines without a reduction works the sorted ore is sold by assay as it lies at the mine, and is packed off on mule-back to the towns for reduction. In the older districts there are plenty of reduction establishments which are glad enough to buy ore at very fair prices, so that a new enterprise is not under the necessity of buying expensive crushing and amalgamating machinery until the mine is properly proved.

Willing's British and Irish Press Guide.—The 1894 issue of "Willing's British and Irish Press Guide" has just come to hand, and supplies in a convenient form an exhaustive list of the newspapers, magazines, and periodicals published in the United Kingdom with their principal foreign contemporaries. The chief merit of the work, as distinguished from others of the same kind, is the small and convenient compass into which its contents have been concentrated. It is not often that such a huge budget of information is served to the public in so handy a form and with so little pretension.

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REASONABLE GEOLOGY.

By FREDERICK DANVERS POWER, F.G.S., M.A.I.M.E.

II.

(*Continued from page* 339.)

THE result of a single experiment is not sufficient data to form a conclusion on; we require to confirm it by repeated experiments, so as to exclude all errors. Pyrites is frequently mistaken for gold because of its yellow colour, and many disappointments have been caused by those who have mistaken quartz for diamonds, on account of its transparency, and the fact that it will cut glass, tests for its other qualities being considered superfluous. Ignorance of the qualities of what one is about to test have resulted disastrously, as in the case of those who confound hardness and toughness, and so to test a diamond—which is really very brittle—have crushed it with a hammer on a blacksmith's anvil.

Artificial experiments enable us to discover and learn the properties of entirely new substances. Mere observation would never have led us to expect the presence of the metal aluminium in clay.

Experiments may be conducted with scrupulous care, and still be of little value in themselves. If by accurate analysis we determine the presence of minute quantities of certain metals in a rock that occur in larger quantities in veins running through that rock, some would at once conclude that the ore was concentrated from the surrounding rock; but after all this is only a hypothesis, which has not been proved. Another man may assume, with equal reason, so far as information gained from the analysis is concerned, that the vein has supplied the rock with these particular minerals, or that the rock is simply a medium through which ore passes from its source to the vein. If on further observation we note that chutes of ore are more frequent, richer, or confined to that portion of the vein which passes through certain rocks, and that these rocks are found, on analysis, to contain more of the metal than its neighbours, then the original hypothesis is strengthened, but still not proved, for there may be something in the rock that tends to attract or precipitate these particular minerals. We may note other facts, however. Perhaps we are able to limit those metals whose origin we are seeking to certain minerals in the rock, of which they may be a necessary or accidental constituent, that near the chutes of ore the rock is decomposed, allowing a more ready passage of water than the tighter undecomposed rock, and that the original mineral in which our metals occurred when fresh is altered, and the metals wholly or partly missing; the veinstone is also found to partake of the nature of the rock through which it passes. These and many other facts collected, little or nothing in themselves, when combined together, especially when tending in the same direction, help to verify our hypothesis.

Different effects may be caused by varying quantities, such as temperature, strength of solvent or re-agents, motion, pressure, time, &c. Salts held in solution when under great pressure are precipitated when relieved of that force. It is our knowledge of the strength of solutions that enables us to tell with more or less accuracy the conditions under which salt and gypsum beds were deposited. By the fractional evaporation of a solution containing sulphate of lime and sodic chloride, first, the most insoluble salt is thrown down as gypsum, and then the common salt. If a flood took place periodically which brought fresh quantities of water into the basin, we would expect it to be marked by alternate layers of gypsum and salt, and, under certain circumstances, mud.

When by careful experiment and observation we have exhausted all our resources, and have ascertained the effect of surrounding things on the object we are investigating, we may then generalise, or infer that what we know to be true of a few things is also true of the whole class to which the few belong.

Many experiments have been made in connection with mountain building to prove certain theories. First, cloth was the material used, several layers of which were laid one over the other; when pressure was applied to the ends, a corrugated surface was formed, which in some respects imitated ranges of mountains. The substance employed did not sufficiently approximate that of rocks; cracks and fissures did not appear; the top of the artificial mountains were always anticlinal; whereas in nature, when of sedimentary rocks, they are frequently synclinal, and when the cloth was relieved of the pressure it fell back to its original position. Ordinary sandstone and slate could not be employed, as on the small scale allowed for such experiments they were practically unbendable. Other experimenters such as Daubrée, Favre, and Cadell, used substances that conformed more to the requirements of the case, and obtained, not only elevations, but also representations of other phenomena connected with mountain building; they also brought various forces into action, which assisted in making clear many obscure points. Professor A. Favre used a sheet of india-rubber covered with a layer of potters' clay in a plastic condition, which was confined at the ends by woollen supports which moved with the rubber when it contracted, thus giving the necessary lateral pressure. H. M. Cadell considered the rocks as rigid, not plastic bodies like cloth or clay, so employed layers of damp sand, foundry loam, and in a few cases, clay, with laminæ of dry stucco powder between, laid down on stout wax cloth. Our knowledge in connection with mountain building is almost confined to experiments such as these.

We often hear miners say that one cannot see an inch further into the ground than the pick's point penetrates, and that, therefore, the wielder of the pick is the real discoverer of rich finds, and not the boss who goes about with his hands in his pockets and directs them where to work. No one wishes to deny that our physical eye is unable to pierce the rocks, but our mental one frequently can. By reason, we are able to ascertain the nature of a thing without actual trial, for the same causes under similar conditions will have the same effect. Of course, we must make sure that what we take as a standard is like what we compare with it, otherwise we would go wrong at the start, but it is not always easy to know when circumstances are the same. A geologist, by keeping his eyes open, can often from a very fair opinion of the nature of a deposit from its outcrop, or from the openings developed by costeaning; he takes every little thing into consideration, from the vegetation, soil, secondary minerals, to springs of water and nature of the outcrop, general physical and geological features of the district, and, if there are any neighbouring mines, from their underground workings. As a parallel case, might be taken that of a physician: when he examines his patient, he does not deem it necessary to cut him open to ascertain the nature of a fever; he tells from external appearances, taking the temperature, noting surrounding conditions, and other outward indications, what the man is suffering from; but as in some cases the trouble is not discovered until after a postmortem, so, before determining certain obscure points in geology, one must have recourse to mining operations. A doctor is often baffled by the deceit and untruthfulness of his patient, who conceals certain facts that should be made known to his medical adviser; but an inanimate object, having no will of its own, is subject solely to the laws of nature, which it is our business to master. An unobservant miner is, to all intents and purposes, simply a machine in the hands of his boss, and has no more right to be considered the unraveller of geological problems than a rock drill that actually penetrates the rock, or the explosive that shatters it. It is often pure chance that one man is set to work in a particular place rather than his neighbour, and although he performs necessary work in turning over the pages for the geologist to read, no credit, on account of perspecuity, is due to him. It is quite an erroneous idea to think it is necessary to carry out a test in a direct manner in order to secure a correct result; it is neither indispensable nor always feasible to do so. The height of an inaccessible tree is more readily obtained by angular measurements than directly with a tape.

In order to solve a problem, whether physical or chemical, we form an ideal in our mind, and try to carry out the conditions in our experiments that we believe to have prevailed. These conditions are frequently of a complicated nature, which necessitate a series of tedious experiments carried out methodically and systematically—first, in an elementary state, and subsequently in combination. There is a difference between possible and probable hypothesis. A man wishing to prove a theory will naturally select such experiments as will fit in with his views, and may even produce the results he seeks, on a small scale, and yet the environments in nature of that which he wishes to demonstrate may be entirely different from those he assumed in his experiments. If still biassed in favour of a pet theory, he may quietly ignore or distort adverse facts, knowing full well how difficult it is to distinguish partial truths, and that dogmas more than half false often pass current for a time as universal truths. To be able to judge correctly of facts requires a well-balanced mind, so that one can pick out real from supposed examples, and avoid generalising on exceptions, or confounding coincidences with necessary conditions.

(*To be continued.*)

BENDIGO GOLD FIELD.

By H. R. WILLIAMS, M.P., Ex-Minister of Mines, Victoria.

II.

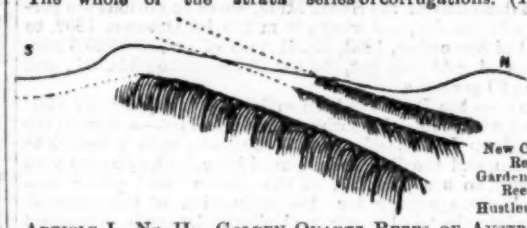
(*Continued from page* 343).

Corrugation.

MR. NICHOLAS, *Mining Journal*, Article No. I, par. 12 "Geology." . . . "The whole of the strata within this field is corrugated, and more or less decomposed." . . . No. II, par. 2, "Corrugation of the strata." . . . For instance, on the third Hustler's reef there is what miner's term a "crown formation," *i.e.*, the anticlinal below the top of the Hustler's Hill to the north dips (pitches) north and to the south dips south, and the saddle reef partakes of this change of dip with the strata.

Par. 7, page 9, Mr. Dunn says: "By proceeding along centre country in the direction of the pitch (S. to N. in above Fig.) beds higher in the series are continually revealed (Fig. 5)."

Mr. Dunn, page 9, par. 9. . . . "In fact over the whole silurian tract the rocks are bent into a series of corrugations." (Fig. 1.)



ARTICLE I, No. II.—GOLDEN QUARTZ REEFS OF AUSTRALIA. FIG. No. 1.

Page 12, par. 7. . . . "When the pitch is away from a central point an anticlinal is formed, or, as the miner's term it, a 'crown.'"

Page 12, par. 3. "The line of pitch along the portion of the New Chum line shown on the longitudinal section of the saddle reef follows an arc of a circle, the centre of which would be at a great depth below the deepest shaft. . . ."

Contraction.

See "Longitudinal Section." Article IV., par. 3. "In the Garden Gully reef there is a "crown formation" (as well as in the Hustler's reef), the several reefs to the south of which having a gentle dip (pitch) to the south, and those to the north of it dipping north. . . ."

Melbourne Argus, November 4, 1887. . . . "A book has just been issued 'Mountains and Mountain Building,' by a well-known geologist, Mr. T. M. Reade, F.G.S., which will drop like a bomb shell among geologists all over the world. The author largely refuses to accept Mallet's theory, that the secular cooling of our planet has caused the crumbling up of the crust into mountain chains. He proves that the theory is totally insufficient to account for the facts. . . ."

Melbourne Argus, April 9, 1887. "Mr. Folie has recently read a paper before the French Academy on the diurnal nutation (vibratory motion) of our planet."

Mr. D., page 11, par. 1. . . . "The rocks bear ample testimony to the intensity of the forces they have been subjected to, especially along the axes or lines of folding. The more yielding slaty beds thickened over the arches (Fig. 17), page 20, par. 17, both anticlinal and synclinal."

Mr. D., page 10, par. 9. . . . "Although such a marvellous contraction of the beds has taken place laterally or at right angles to the strike along the line of strike, the contraction is so slight, as to be scarcely appreciable, and is represented by a gently undulating line—the line of pitch. (Fig. 2)."

Mr. D., page 11, par. 5. . . . "Such corrugations of the strata, as are exemplified on this gold field, are generally attributed to the secular cooling of the earth's mass; the phenomena here presented do not conform to such a theory, for the contraction is practically but in one direction—at right angles to the lines of folding; the contraction along the strike of the axial folds is trifling . . . for there would be little difference in its bulk, whether in a cold or highly heated condition, or whether under little or much pressure; contraction due to loss of heat does not appear in any way to meet the circumstances, vibratory movements, connected in some way with the earth's motion, have probably produced these remarkable folds in the strata. . . .

Mr. D., page 11, par. 4. . . . "This westward thrust of the strata appears to be due to the diurnal rotation of the earth. . . ."

As the contraction is practically in one direction at right angles to the folds, therefore, according to Mr. Dunn contraction "does not appear in any way to meet the circumstances, the phenomena here presented do not conform to such a theory." It will be observed that Mr. Dunn blows hot and cold in the same breath, for he illustrates by "contraction," and condemns it in the same sentence. Suppose we humour him. He says the slate beds thicken over the arches by intense force, especially along the axes, and his Fig. 17 illustrates this by a cross-section. He recognises the thickening across the anticlinals, but ignores the inevitable thickening longitudinally along the line of axes, which would overcome the contraction in that direction.

Corrugation.

Mr. N., *Mining Journal*, Article IV., par. 2 . . . "That, as the strata were slowly corrugating, they fractured along their weakest lines, and that the faults gradually or more quickly increased in extent, as adjustment became necessary under unequal pressure. The two operations may have simultaneously progressed—of faulting and of reef construction."

Mr. N., *Mining Journal*, November 8, 1884, par. 1.:—"Here, then, there is more uniformity or law and order in the structure." . . .

See Mr. N., end par. 2, and the whole of par. 3, *re* earthquakes and earth tremors then occurring in Tasmania, &c.

Mr. Dunn, page 16, par 6:—"Although the quartz at first accumulated in fissures, joints, and in chasms and cavities." . .

Mr. D., page 11, top par . . . "Very great pressure must have been exerted, even by the vast weight of the hundreds of feet of solid rocks. That the movements were slow and long continued and not cataclysmic appears evident, for if these foldings had been violently effected, the results would have been the production of a chaotic condition of the rocks instead of the regular order that prevails," and the inference can only be that the pressure and the strains were exerted continuously and over a long period to produce such results. . . . Par. 2, re-arrangements of the rocks may even now be in progress.

Mr. D., page 13, par 4. . . . "Some faults doubtless resulted from the first sharp corrugating action." . . . Par 3. " . . . Such faults are caused, apparently, by the bending over of the strata, which operation must have caused great strains at particular points and along particular lines (torsion strains), hence the fracturing of the rocks." . . . Par. 8. . . . "The strata throughout the field is shattered and dislocated." . . . Page 16, par. 4. . . . "The beds have been sharply bent over, leaving cavities; they have been ruptured, leaving chasms. The beds have undergone the greatest strain, such as torsion producing fissures."

Mr. Dunn asserts the movements of the rocks were slow and long continued and not cataclysmic. Yet are we inundated with "sharp corrugations; sharply bent fissures; fracturing; shattered chasms; ruptures; strains and torsion strains." Having undergone the above torture, I can imagine the poor beds quite satisfied—whatever Mr Dunn may be—without his cataclysm.

Datum Horizon.

Mr. N., *Bendigo Advertiser*, July 23, 1881. Lecture, "Geology Applied to Industries," 3rd par from end. . . . "The Bendigo graptolites have provided a datum line, or starting point, to work from known aged rock." . . .

Mr. N., *Mining Journal*, December 27, 1884. . . . "These blackslates, I found, would precipitate gold from solution and this property is no doubt partly due to the graptolites so commonly found in them. I regard graptolite bearing slates, near to or adjoining a quartz reef, as a good indication of its proving auriferous."

Mr. D., page 6, par 5. "Owing to the absence of well-marked beds, that might be easily identified wherever met with, there is a difficulty in determining the horizon of the beds at different points. It is possible, that the bands of fossiliferous slates may eventually prove of service in this connection when they are more closely studied."

Page 8, par. 5 . . . "Only some of these (beds) are favourable to the presence of gold." . . .

Metamorphism.

Mr. N., *Bendigo Advertiser*, April 30, 1881, Geological Lecture at Bendigo School of Mines. . . . "We might then naturally be curious to learn, at what depth this granite bedrock formation will likely be met with. The lecturer stated that we should, in all probability, receive timely warning of our approach to it, through finding a perceptible change or metamorphism in the strata, as it was observed at the surface that, commonly, granite areas were surrounded by a belt of such altered strata for a mile in thickness."

Mr. D., page 6, par. 8. "In reference to the metamorphic action exerted by the granite masses on the silurian beds . . . it may be noted, that in the deepest shafts there is as yet no sign of such metamorphic action, as occurs near the granite boundary. It may, therefore, be assumed that for a still further depth of 1650 feet, at least the silurian rocks will continue downward, and that they are not replaced by granite for that depth."

Heart of Bendigo.

Mr. D., page 16, par. 8. . . "Within this same area No. 1 nearly all the heavy returns from quartz reefs have also been obtained. It really forms the heart of this gold field. . . ."

Mr. D., page 8, par. 1. "Proceeding further from the mall, a far more extensive area is found. . . ."

Mr. D., page 7, par. 8. "Taking the mall, Bendigo, which is in the heart of the auriferous area, as a starting point, and radiating from it, it will be noticed that" . . . page 8 par. 2. "Still further from the mall and occupying most of the surface of the silurian tract. . . ."

From the above quotations, a stranger to Bendigo would naturally conclude, that the mall is the very core of the heart of Bendigo, as Mr. Dunn makes it "a starting point," and "radiating from it," and "proceeding further from the mall" and "still further from the mall." What is the mall? It is the main street of Bendigo city . . . if you will take the trouble to sketch Mr. Dunn's zone No. 1 the heart of Bendigo, from the first geological plan on to the plan of anticlinal axial lines, you will find instead of being the centre of this zone No. 1, it is, luckily for the city and the miners, in its extreme south-eastern corner. Mr. Dunn is so anxious to be "accurate where it is impossible to delimit" that we must credit him with having some good reason, for thus choosing the "mall" for his radiating centre or axial point. Perhaps he will fully explain this, as well as why he uses the word "axial" and "anticlinal" in his title to his plan—with scientific reasons in part 2 of my monograph. Without such reasons, we Bendigo miners cannot grasp it, and I fail to see how any outside persons can do so.

Cone in Cone.

Under "explanatory diagrams" I find 9 characters of anticlinal folds (like section of cone in cone structure.) Surely such a structure will not be represented by the word axial?

In *The Mining Journal*, Article No. XI., in 1887, unfortunately I have lost the date of your paper, Mr. Editor*—probably June—Mr. Nicholas, in describing Mount Morgan Gold Mine, in Queensland, says: . . . "I also concluded that the Mount would from, if I may so call it, a pyritos point of view, actually represent a 'cone within cone.'" . . .

* June 4th, 1887. Page 702.

(*To be continued.*)

THE DURATION OF GOLD MINING IN THE SOUTH AFRICAN REPUBLIC.*

BERGRATH SCHMEISSER'S REPORT.

(*Continued from page* 341).

INTENDING to establish any such estimate it is necessary to limit oneself to the consideration of a certain section of the trough which has been sufficiently proved, and seek to establish for this the data. The section between the eastern limit of the Langlaagte B and the western limit of the Glencairn is the best calculated to answer this purpose, because it is here that the larger mines of the Rand are situated. In 1892 the mines of this section produced 24,350·06 kilogrammes of the 37,653·9 kilogrammes, the total output of the Rand—that is, nearly two-thirds of the entire production. This section of the basin has a length of 18·5 kilometres, which, after deduction of 2½ kilometres for unproductive reef and for faultings and dyke disturbances, leaves 16 kilometres of productive ground. The question now is, To what depth can mining be profitably extended?

As in the favourable geological conditions of the Witwatersrand, the prospect offers no special technical difficulties other than an increase of temperature. The answer to the above question must principally depend upon the increase of expense necessarily attending the deeper working.

No reliable statement is, for the present, possible in this particular, because it is impossible to foresee how matters affecting the data necessary for this estimate will shape themselves during the next ten years in South Africa. One must, therefore, have recourse to a comparison with things in mining elsewhere. In the case of gold mining, it has been proved that work can be carried on profitably at a depth of 800 metres without being seriously affected by the increase of temperature. To be safe, therefore, I have first established an estimate limited to this depth, and I have thought it well at the same time to endeavour to state what result might be obtained by the continuation of the mining to a vertical depth of 1200 metres, because of the nature of the metal and its exemption from unfavourable market fluctuations, and because also the depth of 1200 metres has actually been attained in mining (Przibram).

Out of three profiles which I have projected from Simmer and Jack, Village Main Reef, and Crown Reef, there results an average range of reef of 1430 metres at a depth of 800 metres, and 2350 metres at a depth of 1200 metres.

The above-named section, comprising 16 kilometres of productive ground would, therefore, give, at a vertical depth of 800 metres, an area of reef of 16,000 × 1430 = 22,880,000 square metres for stoping. At the present time the average thickness of productive reef cannot be taken at more than 1½ metre, so that the total contents comes out at 34,320,000 cubic metres of ore, which at 2·7 tons per metre amounts to 92,664,000 tons of ore.

Now the yield of 1 ton of ore in 1892 was 20 grammes (13 dwts.), in 1893, 22 grammes (= 14 dwts.) With an average of 21 grammes (13½ dwts.), the total yield of gold would be 1,945,944 kilogrammes. If from this is deducted the about 93,000 kilogrammes of gold produced from the mines of this section from 1888 to 1894, there remains in round numbers 1,852,944 kilogrammes or 59,572,149·6 ounces as gold reserves, having a value of £208,502,523. The average increase of the gold output of the Rand amounted from 1888 to 1893 to 7772 kilogrammes per annum. In the estimate of the section under consideration, two-thirds of this annual increase is taken, or 5181 kilogrammes. Now, supposing that this average increase should continue for 10 years, and that thenceforward the exploitation continued regularly and without interruption, maintaining the output thus assumed, the exhaustion of the reef would in such case take place in about 25 years from the beginning of 1894.

With a vertical depth of 1200 metres the available reef area would contain 99,821,892 ounces, worth in round figures £349,376,000, the extraction of which would require about 40 years, with a proportionate increase in appliances. With the above assumed annual increase of gold output, the extraction would in 10 years from this time be more than doubled. The increase will, however, in reality, not take place with that degree of regularity which, for the purpose of my estimate, has been assumed. Having regard to the extensive installations undertaken in 1893, and the intended erections and orders given for mills and cyanide works, it may be assumed that in the next few years the increase of production, as compared with the last few years, will be considerable, but periods of great activity are usually followed by periods of comparative slackness in development and of relaxed progress. Should it so happen, however, that the output be doubled in five or six years, and I hold this to be quite possible, even then the time necessary for exhaustion would only be shortened by a few years, and the result would remain substantially the same. The above indicated mines, with two reefs, would alone yield 4,289,000,000 marks with a depth of 800 metres, and 7,187,000,000 with a depth of 1200 metres.

Let it be mentioned that the foregoing results are nearly agreed with the estimates made by Mr. Hamilton Smith, an American engineer, of London, for Messrs. Rothschilds and Sons. This estimate was published in the *Times* of 17th January, 1893. Mr. Smith estimated that with a vertical depth of 915 metres, or 3000 feet, the section above indicated would yield £215,000,000, while my estimate at 800 metres comes out at £208,000,000, and for 1200 metres at £349,000,000.

The excess in my estimate is partly due to a small difference in the length of the ground, and on the other hand it has to be remembered that in the year 1893 a deep boring south of Simmer and Jack furnished data which occasioned a greater flatness to the formation in depth in my sections. Now it arises from the mere fact that the ground to which the above estimate applies is only 18½ kilometres in length, while the trough has a length in round figures of 80 kilometres, that the total output of the mining will greatly exceed the above estimate—even supposing that many of the mines outside of the above mentioned section of the basin may, in the long run, prove to be less rich than those lying near Johannesburg.

A diminution of cost will by-and-bye take place, which will render the exploitation of other reefs possible, which now are not supposed to be sufficiently rich to be worked; by this means there will be a further augmentation of the gold production. Already the Robinson Company has decided to exploit the main reef in the year 1894, because this, according to the latest data, contains a paying quantity of gold in depth.

The conglomerate reefs near Klerksdorp, about 200 kilometres south-west of Johannesburg, are similar in character to individual members of the Rand deposit, and are, therefore, for the most part, considered as its western extension.

During the sudden rise of the gold industry of the Rand there arose here also a regrettable spirit of gambling in mining properties, and it has not yet recovered from the reaction which ensued thereupon. In my opinion, a considerable mining development will take place there when public confidence is restored, with the application of capital and good management. Truly, mining at this place will be much less important than at the Rand, because of the more restricted extension of the deposit, but it is quite impossible to judge of the scale on which development will take place.

The gold occurrence of Vryheid, 290 kilometres south-east from Johannesburg, is said to be of the same kind geognostically as at the Rand and near Klerksdorp. I have not personally examined this field, and the statements as to its value vary greatly in their nature. I have also to mention the circumstance that near Haenertsburg, in the Zoutpansberg district, an auriferous conglomerate reef has been found, as also at the Duivel's Kantoor, and on the summits of the surrounding hills to the south and east, in De Kaap district, numerous auriferous conglomerate beds exist. Although these discoveries do not, for the most part, contain more than 3 grammes, or 2 dwts. of gold per ton, yet they furnish proof that the occurrence of gold in the conglomerates of the Transvaal is of extraordinary great extent.

In the De Kaap, Klein Letaba, Malmani, Marabastadt, Houtboschberg and Silati gold fields, the gold is met with principally in quartz lodes, having the same dip and strike as the stratification; sometimes, however, they traverse the stratification. Some occurrences in the north of the Transvaal are either to be considered as quartz lentils or as lenticular lodes—that is to say, as lode fissures, agreeing in strike and dip over great extensions, now becoming thin and now powerful. The mining developments hitherto, are of too slight an extent to render it possible to pronounce any decided judgment in this particular. The gold in the lodes is found mostly in columns—that is to say, in locally enriched portions met with by following the lodes in depth. The gold contents accordingly of the deposit, rise in places to a considerable richness, and contrariwise diminish to a degree which renders it unprofitable.

The Sheba Mine, Barberton, is the only lode mining that has made some progress in depth, and in this case it has been carried to a depth of 116 metres below the outcrop, and about 50 metres below the Fig Tree Creek. All the other mines in the De Kaap gold fields are as yet worked above the valley bottoms. The Letaba and Birthday Gold Mines, in the Klein Letaba gold field, have a depth of 40 to 60 metres, while nearly all the other works of this and of the other gold fields are scarcely more than mere preparatory works, and have as yet reached no considerable depth. The development of the mines in all these fields, is hindered for lack of capital, the drawback of bad roads, want of coal, and frequently very unhealthy climatic conditions. Work on a considerable scale is, therefore, for the present done only at the Sheba Mine, where conditions are particularly favourable, and where, from the 1st October, 1892, to the end of September, 1893, 33,261 tons of ore, and 989·3 kilogrammes of gold was got, the ton of ore costing 32s. 8d., and yielding 29 grammes.

So soon as the Rand has been sufficiently supplied with capital—and it is capable of absorbing a great deal yet—and when the railway from Lorenzo-Marques to Pretoria, with a branch to Barberton, and the line from Komati Poort to Leydsdorp have been built, so soon, in fine, as the planned and partly constructed arrangements for the conversion of the principal streams into electrical energy, replacing coal, have been brought into successful operation, then certainly will mining again receive an active forward development, and then mining is destined to add to the gold production of the Transval for a long time to come. To what extent this increase will take place is, however, uncertain, owing to the already mentioned inequality and uncertain nature of the lode deposits, in connection with the absence of any considerable exploration.

This last remark applies also to the rather important "laterit" and alluvial deposits. The above statements on the duration of gold mining in the South African Republic of the Transvaal will by-and-bye be followed by a comprehensive report on the geognostic and mining conditions.

* In the paragraph at the foot of the first column in the first section of this report, referring to the depth at which the beds lie, the equivalent of 6 to 7 kilometres is given in yards, not feet, as it was erroneously stated. The figures feet are 19,673 to 22,952 feet.

SPECIAL CORRESPONDENCE:

COLONIAL AND FOREIGN.

OUR SOUTH AUSTRALIAN LETTER.

(FROM OUR OWN CORRESPONDENT.)

TIME will not allow of my sending you a long letter this mail, but what has to be reported is, on the whole, tolerably satisfactory. The search for gold continues, and two or three recent discoveries promise to turn out well. Indeed, the stone from the surface, and down to the depth of 40 feet on the lode in Lovely Gully, 9 miles west of the Alma and Victoria Mine, Waukaringa, is very rich. Gold can easily be seen in fine specks through the ironstone and quartz matrix, and also in small pieces from the size of a small pin's head to half a pennyweight. An assay gave a return of 70 ounces to the ton, but with such specimens this is not to be wondered at. The bulk would probably yield 3 ounces of gold to the ton of lodestuff. There is also in the neighbourhood a good extent of very fair alluvial ground. Another discovery fully equal to this has been made in another locality, which is not yet publicly known; and although I have had a small interest given to me, the information as to the *locus in quo* is withheld for the present. The matrix is as favourable as could be desired, and gold shows both in the fine gossan and in the solid hematite ore.

The cyanide process seems likely to accomplish great things for us in auriferous country, which hitherto has not been worth working. My letters have frequently mentioned the vast extent of gold-bearing land we have in South Australia, and it is hoped that before long we shall have a revolution in gold mining here. It has often occurred to me that it is a matter of surprise how ready English investors are to go into speculations without due inquiry. The memory of the Kangarilla Silver Mine will doubtless be green in the recollection of many persons in London. Now, if letters had been sent to me making inquiry as to that property, I could have given its true history, and even if intending investors had paid me 50 guineas for the information, they would have saved many thousands. But inquiries that come to the colony about mining properties are few and far between. My little work on the mines published in 1863, was written for the express purpose of putting English investors on their guard against "wild cat miner."

I enclose an advertisement from my friend, Mr. W. White, an experienced mining man, who holds the same opinion as myself on this subject, and who is well qualified to report and advise on mining properties. The MacDonnell Ranges in our northern territory are attracting attention again. Good deposits of gold are known to exist there, and gems have been met with. As you know, some of the finest mica in the world was found in that part of the country. Two well-known prospectors, Messrs. Jas. Lamb and W. Earle, are starting for those ranges to-morrow, travelling 688 miles by rail to Oodnadatta, thence, with 14 camels and two black boys, they proceed to the MacDonnell ranges, and thence westward to the Murchison in West Australia.

THE ORIGIN OF CERTAIN NOVACULITES AND QUARTZITES.

BY FRANK RUTLEY, F.G.S.

THE following is an abstract of a communication by Mr. Frank Rutley, F.G.S., Lecturer on Mineralogy in the Royal School of Mines, London, read at a recent meeting of the Geological Society of London, Mr. Henry Woodward, F.R.S., President, in the chair:—

The novaculites of Arkansas have already been admirably described by Mr. Griswold, in Vol. III. of the Arkansas Survey Report for 1890. One of the characteristic microscopic features in Ouachita stone is there stated to consist of the presence of numerous cavities, often of sharply-defined rhombohedral form, which Mr. Griswold considers to have been originally occupied by crystals of calcite or dolomite.

The author, while admitting that the cavities were no doubt once filled by the latter mineral, ventures to differ from Mr. Griswold, and some of the authorities he cites concerning the origin of the rock. Crystalline dolomites, when dissolving, become disintegrated into minute but well-formed rhombohedra. As the process of dissolution proceeds, these crystals may become so eroded that the rhombohedral form is no longer to be recognised. The author points out that no inconsiderable proportion of the cavities in Ouachita stone present irregular boundaries, such as the moulds of partially eroded rhombohedra would show.

He then offers a fresh interpretation of these cavities, so far as the origin of the rock is concerned:—

1st. He assumes that beds of crystalline magnesian limestone have been slowly dissolved by ordinary atmospheric agency, and the percolation of water charged with carbonic acid or other solvent.

2nd. That, as the limestone was being dissolved, it was at the same time being replaced by silica, which enveloped minute isolated crystals and groups of crystals, some perfect, others in various stages of erosion.

3rd. That the silica assumed the condition of chalcedony, its specific gravity, as stated by Mr. Griswold and as determined by the author, being low in comparison with that of quartz.

4th. The residuum of the original dolomite or dolomitic limestone was removed, leaving the perfect and imperfect rhombohedral cavities. A calciferous gold-bearing quartzite from the Zululand gold field is described, and a similar origin is ascribed to it, but in this case the original rock appears to have been simply a limestone, not a dolomite. The gold seems to occur chiefly in the calcareous portions of the rock. The author has also been tempted to suggest a similar origin of the saddle-reefs of the Bendigo gold field. In all of these cases the train of reasoning is based upon the conclusions arrived at in his previous paper "On the Dwindling and Disappearance of Limestones." He indicates that the stratigraphical relations of the Arkansas novaculites, as described in Mr. Griswold's report, are such as to warrant the assumption that limestones once occurred in the position now occupied by beds of novaculite. Many collateral matters are dealt with in the paper which cannot be given in abstract; among them is an attempt to classify quartzites.

Discussion.

Dr. G. J. Hinde complimented the author on the ingenuity of his explanation of the origin of the Arkansas novaculite rocks, but failed to see that there was any evidence for his fundamental assumption that these rocks were originally limestones or dolomites which were now replaced by silica. Taking into account that the novaculites were over 500 feet in thickness, and that they were interbedded with shales and sandstones, it might reasonably be asked what had become of the limestone of which they were originally supposed to be formed, and also whence the silica had originated which was stated to have replaced the limestone? The speaker did not agree with Mr. Griswold that the novaculites were produced by simple sedimentation of fine fragmental silica; but he considered that their structure of cryptocrystalline silica, and their resemblance to chalk-flints in microscopic characters, which Mr. Rutley had pointed out, indicated that, like these latter, they might have had an organic derivation. Moreover, in the beds of carboniferous chert from Ireland, Belgium, Yorkshire, Wales, &c., and in the cherts of the Durness limestone (sections of which were exhibited), there were numerous rhombohedral crystals of calcite, the same as in the novaculites, and they also resembled these in other respects. As these cherts had been proved to be derived from the siliceous remains of sponges, it might well be supposed that the silica of the novaculites had a similar origin. It was true that no siliceous organisms had as yet been found in the novaculites, but this might arise from imperfect observation, or it might be that the changes which have taken place in the rocks had obliterated them.

Professor Hull remarked that the chert beds of the upper carboniferous limestone of Ireland, referred to by Mr. Rutley, and described in the joint memoir by the late Mr. Hardman and himself, were composed of variable proportions of carbonate of lime and silica, and also contained silicified shells, corals, and crinoids—animal structures that must primarily have been formed in carbonate of lime; thus proving that the rock had originally been to a great extent a limestone. Along with these structures were numerous spicules of silicious sponges, recognised in the thin slides by Mr. Hinde. But the rock described by Mr. Rutley, as far as he had been able to gather, was of quite a different character from these carboniferous chert beds. It was a solid quartzite, without evidences of having contained marine calcareous organisms; and, however ingeniously the author had succeeded in showing, by means of his researches in the laboratory, that a limestone might be changed into a quartzite, he (the speaker) feared that without some better evidence of so remarkable and fundamental a change in the composition of the Arkansas rock described, Mr. Rutley's views could scarcely be accepted.

The author, in reply to Dr. Hinde's remarks, stated that he had purposely refrained from expressing any opinion concerning the source from which the silica of the novaculites had been derived. Dr. Hinde was doubtless correct in assuming that the silica of chert was frequently composed, at least in part, of the remains of sponges. He had not detected any sponge-spicules in either Arkansas stone or Ouachita stone. He also briefly alluded to the observations of Professor Hull.

Interesting Locomotive Test.—An interesting experiment took place on the North-Western Railway on Sunday. Two engines, drawing 52 trucks of coal each, and three brake-vans, left Crewe on parallel lines for Stafford. On reaching Stafford the engines were reattached to the loads, and brought them back to Crewe. The net drawing weight was about 800 tons per engine, and both engines running full speed almost abreast gave rise to a report that the locomotives were racing. The officials, however, say it was a test not so much of speed as of fuel-saving and weight-drawing power between two new engines of different type. The coal was carefully weighed out to each, and the speed was noted with the heavy loads. The engineers claim that the success lies with the new type of compound locomotive.

REVIEWS.

WHAT THE EARTH IS.

The Story of Our Planet. By T. G. Bonney, D.Sc., Professor of Geology in University College, London. Illustrated. (London: Cassell and Company, Limited.)

Although geology, like nearly every other branch of knowledge, does not suffer from a want of treatment in a literary form; and although its professors and lovers supply us from time to time, as we need them, newly-formed theory and information, still we cannot but welcome Mr. Bonney's artistic book, notwithstanding that its pages tell us little that is new and original. The author takes care to inform us modestly in his preface that he has no intention of attempting to add another to the text-books of geology in the English language, and then he goes straightway and does it. He has effected it in a way, however, which is really attractive to and readable by the class to whom he appeals. As he says, it is not a book designed to prepare for an examination, or serve as a guide to the literature of the subject. "A class of persons, however, still exists to whom I hope this volume may be acceptable and useful. Many who, to use the common phrase, have received a good education, though they feel much interest in the history of the earth on which they live, have neither the leisure nor the inclination to master the technicalities or to enter into the minute details of any one branch of science. At the present time there is, I think, a real danger lest such persons should be repelled from all knowledge of science by its increasing complexity." Readers will see from these few words for whom the book is written. It appeals thus to a considerable class, and, speaking from the point of view which the author himself has before him, we cannot but admit that he has admirably succeeded. He seems to have hit upon the very thing that is needed. We shall, therefore, expect to hear of the book having a large sale.

The scope and object of the work are really concentrated on its title page. Of course, it is not within the power of man to tell the *story* of the earth—that is, from the very beginning of things, when this earth was a ball of fire, up to the present time. It is not like watching the career of a man from his birth to old age, and jotting down from time to time the process of his development internally and externally. Nevertheless, no exception can be taken to the title, from the point of view of leading us astray; of purporting to tell us what it cannot; or of offering us the knowledge which is not to be found within its pages. It accomplishes the purpose of its being in an admirable manner, and will well repay the study of it by the class to whom it is addressed.

Its plan is generally similar to Sir C. Lyell's immortal work, but in it the author has, of course, been able to draw upon the knowledge acquired during the past 21 years, which has been considerable. He has endeavoured to exclude, as far as possible, all technical terms, and of this effort we cannot but approve. We heartily sympathise with his opinion, and even to some extent endorse it—that technical terms are sometimes coined without good cause. "The use of them," he says, "seems to be pleasing to some minds, for it indicates an intiation in mysteries and a superiority to the common herd. But from a terminology not generally intelligible, worse evils than the gratification of personal vanity are apt to arise, namely, the worship of phrases and the substitution of words for ideas. Science, as it grows, suffers from its epidemics, and high-sounding words are often the bacteria which communicate disease to mental constitutions of the less vigorous type. To some persons a sonorous term seems to be so satisfactory that it passes current for an idea, and is a mass for any amount of hazy indefiniteness. . . . An English phrase may require, when printed, a few more letters than a misbegotten compound of Greek words (often barbarous to the ears of a scholar), but it possesses this advantage, that he who runs may read, and he who speaks cannot clothe himself with grandiloquence as with a cloak and conceal mental poverty beneath verbal splendour. So, though technical terms cannot be wholly avoided, and the scientific names for plants and animals, as a rule, must be employed for the sake of precision, I have striven, as far as possible, to abstain from them, and to write as addressing men and women of good general education, who might desire to know something of the methods of reasoning which are adopted in geology, and of the general conclusions to which these have led. But in trying to tell 'The Story of our Planet' in fairly plain words, I have not shrunk from dealing with some of the more difficult questions which it involves."

Part I. describes in a general way the land, air, and water regions. In Part II. the author passes on to the processes of earth-sculpture and rock-building, and from these to the agents of change which operate from the interior of the earth, such as volcanoes, earthquakes, and other movements of the crust. Part IV. gives an account of the probable condition of the globe in the earliest stages; a description of the building of the British Isles as an example of geological history, together with descriptions of the development of Europe and the other continents. The history of life on the earth is then traced, the work concluding with discussions of some theoretical questions, such as the age and duration of the earth, the permanence of oceans and continents, the cause and history of climatic change, and the distribution and descent of life.

Least of all, the book is an ornament for any library. Much care seems to have been spent on its external appearance, the result being an artistic production, the praise of which must, of course, be accorded to the famous firm who have published it. The numerous illustrations, too, are first class, and well worthy of the work which they adorn.

A BOOK FOR THE INVESTING PUBLIC.

Investors' and Shareholders' Guide. By J. D. Walker and Watson. (Edinburgh: E. and S. Livingstone.)

While such able and reliable guides as the one before us are at the service of the investor, upon him must largely rest the responsibility for the losses he may incur. Both within the area of investment and the larger domain of speculation there is much that calls for elucidation and comment, and the joint authors of this tastefully got up little work have applied themselves to the dual task of the expositor and critic with justice, judgment, and ability. The first few pages are sufficient to show that the writers are men of large and varied experience, of rare force of perception, and animated by a sincere desire to befriend a long-suffering section of the community. No attempt has been made to divide the matter contained in the book into sections, but it naturally falls under three heads. First, the law as it affects companies is conveyed in a clear and comprehensive manner, so that the layman who would never have the courage to wade through even one of the many Acts of Parliament to which he owes the security of his position is offered a clear insight into the advantages and defects of existing statutes and statutes in contemplation. Many a shrewd remark invites the attention of the legislator in the twelve chapters dealing with this subject, wherein it is made abundantly clear how easily enactments can err in direction and effectiveness. The more questionable methods of the professional promoter find a rigorous exposure in the section dealing with company formation. Company-making, he says, has become an industry, and to enable those who follow it to live, new concerns must be continually turned out. The outspoken fearlessness which characterises the authors' utterances in this connection, and the apt enunciation of tests which may be applied to a company's management, lend a peculiar value to these pages. Lastly comes what is entitled to be called a masterly analysis of the home, colonial, and foreign investments. Here the writers have had the patience to go *seriatim* through the whole catalogue, giving in each case most useful advice. There can be no doubt that, did the large body of investors acquaint themselves through this book with the bare elements of the knowledge on which their safety depends, there would be much less reason to fear the terrible collapses which so often shake the financial fabric to its base.

PUBLICATIONS RECEIVED.

In sending books for review publishers should state their price.

"Field Geology." By W. Henry Penning, F.G.S., with a section on Palæntology. By A. J. Jukes-Browne, B.A., F.G.S. Second edition. (London: Baillière, Tindall, and Co., King William-street, Strand). Price 7s. 6d.

"The Science of Mechanics." A critical and historical exposition of its principles. By Dr. Ernest Mach, Professor of Physics in the University of Prague. Translated from the second German edition by Thomas J. McCormack. (Chicago; The Open Court Publishing Company. London: Messrs. Watts and Co.). Price $2·50.

"The Monist." A quarterly magazine.

Proceedings of the Institution of Mechanical Engineers.

MONTROSE GOLD MINING AND EXPLORATION COMPANY, LIMITED.

MR. WILLIAM E. DAWSON'S REPORT.

SOME months ago the company's manager in the Transvaal reported the discovery of coal upon or in the neighbourhood of one of the company's farms. This information he has since followed up, and the directors have issued to the shareholders a copy of the subjoined report, made by William E. Dawson, Esq., which has recently been received. The recommendation in the last paragraph of the report has been acted on, and the mining rights on the farm adjoining that belonging to the company have been secured on favourable terms.

Report.

In accordance with your instructions I have visited the farm Kalksloot, and beg herewith to hand you my report:—

This farm is situated in the district of Pretoria, upon the Eland river, about 45 miles north north-east of the town of Pretoria, and is divided into two portions, of which the northern is your property. The formation consists of sandstones, grits, and shales, and is evidently an extension of the Middleburg coal fields. The spot where the coal has been discovered is situated upon the southern portion of the farm, about 300 yards from your boundary, where it outcrops in the bank of the river. The amount of development up to the present has been very limited, but at the same time quite sufficient to prove that a seam of coal exists, and that it is a good quality is evident from the fact that some 200 bags which were sent into Pretoria fetched a good price, and is described as

Being a Good Burning Coal.

The formation dips towards the north east, as far as can be seen in the present workings, at a very slight angle. About 300 yards to the north the same formation again crops out also in the bank of the river, just upon your boundary line. The coal itself is not visible at this spot, but as the formation is a continuation of and is identical with that at point A, I am convinced that coal will be found at a depth of about 20 feet from the surface. And being, as I have previously mentioned, on the dividing line, it must also be found within your own portion of the farm. The cost of prospecting, owing to the nature of the ground, will be small as the coal lies so near the surface; I should certainly advise sinking a shaft, but it would probably cost less to drive in from the outcrop.

The coal is of a bituminous nature and burns freely, but I would wish to mention that as the coal sent into Pretoria, and the sample of which I made an analysis, was taken from the surface, where it had been weathered to a considerable extent, the quality is not nearly as good as may be expected when it is obtained from some further distance in on the seam. This will also account for the somewhat high percentage of ash as shown in the analysis attached. Owing to the heavy rain and the flooded condition of the river, which had nearly filled up the small working from which the coal had been extracted, it was imposible to ascertain

The Exact Width of the Seam,

but I am informed that it has a body of about 5 feet. The hanging-wall is a carboniferous grit, which will form an excellent and firm roof to the mine, thus enabling you to economise in the matter of pillars or supports.

As the seam is similar in position and general characteristics to the Middleburg Coal series, I think the cost of mining will be about equal, namely, 5s. per ton. There is, however, one point I would wish to mention, and a very important one, inasmuch that it tends greatly to enhance the value of the property, namely, the fact that according to the present survey of the new railway, it will pass within a very short distance of Kalksloot, and, therefore, it will then be possible to convey your coal to the market far more cheaply than under present conditions, when everything is more or less dependent upon the state of the roads. There is also the probability that the railway company will require a certain quantity for their own purposes. I may also add that for

A Good Coking Coal,

which this appears to be, the manufacture of coke might be an item of profit, the present price in Johannesburg being 12s. per cwt.

Taking the various circumstances into consideration, I should strongly recommend you, at any rate, to secure the southern half of the farm, provided you can obtain the mineral rights upon reasonable terms, for one portion will not be of much value without the other, and, as I have previously remarked, its value can be determined very easily and at a small expense.

MINERALS OF THE ZAMBESI BASIN.—On the 6th inst., Mr. E. Foa read before the Society of Arts a paper entitled, "Travels in the Basin of the Zambesi," in the course of which he mentioned the following particulars:—Between the Tete region and the Kilimanjaro plateau there exists a bed of coal 30 feet thick, which can be worked opencast at the favourable points—that is, at a few hundred yards from the Zambesi and one of its affluents called the Revogwe; three or four galleries are already open and worked, and a small railway carries the coal to the river, ready for the use of the steamers, and to be taken down to the Chinde and East African seaports. As this coal is of good quality, it promises well for the undertaking, and for the future industry of the country. Among other minerals are found magnetic iron and pure iron ore, which cover the country. A few traces of graphite indicate the possibility of lead and also silver ores being met with, as the two metals are often found together. At Chicoa and the north of Tete, near the coal, there is a bed of pure copper quartz, while alluvial gold in more or less important quantities, malachite crystals, and in several places sulphuric springs, are also encountered.

MEETINGS OF MINING COMPANIES.

ALMADA AND TIRITO COMPANY, LIMITED.

The past year's work.—The silver difficulty.

THE ordinary general meeting of the Almada and Tirito Company (Limited) was held on Wednesday, at the offices of the company, 6, Queen-street-place, the chair being occupied by Mr. SAMUEL J. WILDE.

The SECRETARY (Mr. W. F. Garland) read the notice convening the meeting.

The CHAIRMAN said:—Gentlemen, We have got a very poor story to tell you, but as the most interesting portion of our working is underground, and as I shall call upon Mr. Taylor to describe it, there is not much left for me to say except that the exploring underground does not appear to have been very successful. We have not, however, been able to explore as much as we should like to do had we the means. Our works have also been greatly hampered by an insufficient supply of water. Probably you all remember that for three years there was rain very little in that part of the country. There was a very fair amount of rain during this last season, but it gave out very soon, indeed, because, we presume, the ground having been made very dry during the preceding three years absorbed the water in quite a short time. That has added to our expenses, and prevented our attacking the tailings in the way we should have liked to do. In that case we should have had some more money to carry on our explorations, and should probably have made the discovery of some richer ores. Those are two causes which have affected us very much. Then, again, there is the fall in the price of silver. I do not know that it affects Mexico, so much as other places. Great economy has been exercised in every department, and latterly wages have been reduced to some extent, but where the effect of the fall in exchange was most felt was in the purchase of the necessary supplies from America, where the cost of imported materials has been very largely increased. As regards losses, the loss for the year was £4878. You must add to that the £1516 which the shareholders decided last year should be written off, and also the loss by exchange depreciation, amounting to £2750, and that makes a total loss of £9145. On the other hand, there was a credit balance brought forward in the preceding year of £1281. A debit balance is, therefore, left at the present time of £7863. I may mention that great improvements have been effected in the reduction works. We have got an excellent staff out there, and I believe that Mr. Taylor will say we are able to reduce ores now with profit, which we could not have so reduced before. Since the accounts were made out there has been a small monthly loss. In a telegram received to-day the engineer says we shall be able to keep the mine going until August. My surprise is that the mine is still living to-day, considering that we have had no farther capital raised. We are not in debt, and we can keep on going, as I understand, until August without getting into debt. That will leave time for the discovery of some more valuable ores than we have had lately. Also we hope that there will be some change in the price of silver, which will make a great deal of difference, and, perhaps, enable us to bring us more money. Without some additional funds I do not see how the mine can be brought to any success. To do any real good more money must be spent in explorations. We may be able to keep the mine going, but I don't think we shall be able to do better than that. The Chairman concluded by moving the adoption of the report and accounts.

Mr. HENRY SWAFFIELD seconded the motion.

Mr. JOHN TAYLOR said he had stated at the last general meeting, held on June 9, that the most important mining work at that time was the completion of the Dios Padre shaft. The total depth of that shaft was now just 600 feet. This gave free access to the northern part of the property, to which so much importance was attached, and also thorough ventilation to the workings, which, as they were aware, Mr. S. Gifford was strongly of opinion should be explored. There was 900 feet beyond the Dios Padre shaft, all practically virgin ground—ground merely scratched upon at the surface by former workers, and there was also knowledge of a mine beyond the boundary worked by other persons, which they had been told was a rich one. Mr. S. Gifford strongly recommended, as he had told them in June last, a vigorous policy, not only in that particular section of the property, but also on the whole of the property, and he, in common with the Chairman, strongly regretted that the circumstances of the company had not been such as to enable them to carry it out. It had been impossible to carry on a vigorous policy, for it had been absolutely necessary to make the mine as nearly self-supporting as possible. The amount of development work done during the year had, of course, been somewhat limited, but they would see from the report of Captain Nute that in the Dios Padre, which was at present the most important scene of operations, the explorations, chiefly in level driving, had extended altogether 1319 feet. In the 250 feet level north a rich bunch of ore was passed through for about 60 feet, and this was followed down a certain distance in a winze below. That, of course, made the drivage of the level below, which was going forward underneath, a very interesting and important work. North of that they had 900 feet of ground entirely unexplored, and Captain Nute confidently looked forward to finding new shoots of ore there, and he thoroughly agreed with Mr. Gifford that work should be energetically pushed forward. In the Tirito Mine—the old mine—a crosscut had been driven at the 20 fathom level in a very massive lode, giving a good assay value, and the level was driven 166 feet north and 136 feet south. These drivages had then, unfortunately, to be suspended during the autumn of last year, in order to reduce expenses, but the lode in both was very promising, and at times yielded good ore of upwards of 60 ounces to the ton, and there was a very large piece of unexplored ground to the north. In the Balvanera shaft a very limited amount of work had been done, but there also the prospects were good, and some of the places ought certainly to be followed up. The little Cruz Verde Mine had been of very material assistance during the year, giving some very good returns of silver. A good quantity of rich ore was taken from the stope above the 156 feet level, and some of the ore was very rich, assaying 200 ounces to the ton. There was little more to say, excepting that he should be very glad to answer any questions. They had a large mineralised belt, 100 feet or more wide, in which veins of rich silver ore had been proved to exist, and to pass through the company's property, something like three-quarters of a mile in length. They had the fact that valuable deposits of ore had been worked at different points long distances apart in the different veins, and he could not but feel that it would be very desirable if some arrangement could be come to in order to provide the funds to further vigorously develop the property, which appeared to hold out such good prospects.

The motion for the adoption of the report was then put and carried.

On the motion of the CHAIRMAN, Mr. Henry Swaffield was unanimously re-elected to the board of directors.

Mr. SWAFFIELD, in returning thanks for his re-election, said he was not without hope that the company would see better days. Various causes had contributed to make the past year a very disappointing one. They had not had the luck to make a good discovery of ore, and they had the greatest possible difficulty and annoyance in consequence of the fall in silver. However, it would look as if silver had now reached the bottom for the present, and if there should be some international arrangement by which silver could be brought into greater use they might have a chance of raising some more capital for the more thorough development of the property, in which case they would have a very good chance of ultimate success. There was evidence that a considerable amount of ore was got out of the mine before the company or any of its predecessors in England had worked it, and it was only during the past year or two

they had been working the new portion of the mine. Even yet they might make a discovery between now and August, and so be able to continue without calling on the shareholders for any money.

The auditor, Mr. Elliot, having been re-elected, the proceedings terminated with a vote of thanks to the Chairman.

IDAHO EXPLORING COMPANY.

Successful reconstruction scheme.—Plans for the future.

The first general (or statutory) meeting of the Idaho Exploring Company (Limited), was held on Monday, at Winchester House, Old Broad-street, E.C., Mr. R. C. Power (the Chairman) presiding.

The Secretary (Mr. W. M. Steward) read the notice convening the meeting.

The Chairman said: Gentlemen, this, as you are doubtless aware, is merely a formal meeting, which every company is by statute obliged to hold within four months of registration. There is no business to transact, and, naturally, no balance-sheet to submit. The meeting would have been convened at an earlier date, but we wished to be in a position to tell you something of the reconstruction, as well as of the present position and future prospects of the company. All those concerned in the business of the reconstruction have worked hard to make it a success, and I am glad to be able to tell you that it has been successfully carried through—I may say, with success beyond our anticipations, and with the strictest possible economy. I should like to emphasise this point of economy in the working expenditure, because it is a very essential feature in the policy of the board to keep the expenses of the management within the narrowest limits compatible with competency. I can confidently say that up to the present time not one shilling has been unnecessarily expended either by the liquidator or the board. One satisfactory feature in the liquidation is that all the liabilities of the old company — and they were very small—have been, with the exception of one outstanding claim and two unimportant matters, settled on a basis of compromise, involving in some instances a reduction of as large a sum as 75 per cent. of the amount due. As liquidator of the old company, I am taking measures to endeavour to effect, at as early a date as possible, a realisation of the company's assets in Idaho, and for that purpose I some time ago sent out instructions to an agent in San Francisco to act for me in the matter on commission, under power of attorney. As the mines, however, are nearly inaccessible during the winter, and especially in the latter part, owing to the melting of the snow, I do not anticipate that any definite result will be arrived at until the middle of the summer. You will observe, gentlemen, that the present board consists of two directors. It has been considered advisable, in order to reduce the expenses as far as possible, to elect two directors only for the present, with power to add to their number if necessary, their fees being fixed by the articles at £50 per annum each. The inclusive cost of the fixed charges of the London management, including the said fees, secretary's salary, clerical work, and office rent, is only £160 a year. I do not think it is possible to work more economically than that. (Hear, hear.) Now, with regard to the present position and future of this company. Several properties, the reports of which have been laid before us, have been carefully considered—properties situated in Mexico, in South Africa, and in Australia; but we have felt that the greatest care and caution were called for in dealing with this question. There are people, I believe, who think that this company is going to spend large sums of money in sinking shafts, setting up costly machinery, and, generally speaking, in exploring and developing claims for the benefit of vendors; but this is not the object for which this company has been formed. We are an exploring, not a mining, company; our object, broadly speaking, is to make money, not to sink it in rash enterprise. I would desire, also, to point out to the shareholders that there exists no connection between the operations conducted by the late Idaho Mining Company and those conducted by the present Exploring Company. The scene of the former company's labours was the United States, whereas the functions of the present company will, perhaps, be best explained by reading you a brief extract from the circular sent out with the notice calling the meeting to wind up the old company:—"In view of the prevailing depression, and the fact that at the present time vendors of mines find it extremely difficult to deal with their properties, the directors think it would be unwise to propose any scheme involving large outlay. At the same time, they wish to have an opportunity left open, so that there may be every chance of the shareholders recouping themselves for past outlay. They think the most sensible plan will be to make the company a prospecting concern, which will only undertake to test properties with a small outlay, and, if satisfactory, to acquire them, if possible, for shares only. For this purpose any funds ultimately available could be used, and, with an assessment of 6d. per share, it is hoped that an interest may be acquired in some property which may, when financial matters are in a brighter condition, enable the shareholders to see a substantial return on their investment. The London expenses, including directors, secretary, offices, &c., will be fixed at a minimum inclusive figure. Thus, at an extremely small outlay, with the rigid economy which will be exercised, a fair opportunity will be offered of a reasonable mining speculation at a minimum possible risk." There seems to be some misapprehension among many of the shareholders as regards this important feature in our programme, viz., that this company is an exploring and not a mining company, and I again repeat that, beyond a slight similarity in the titles of the two companies, there is nothing in common between the *modus operandi* past and present. The extract I have read you, gentlemen, states briefly the general lines on which we are proceeding, and I cannot too strongly emphasise this, that the corner-stone of our policy, and the essential condition of ultimate success, is that we should husband our resources, and not follow the unfortunate example set us by so many reconstructed mining companies of rushing into vast preliminary outlay and making call upon call for what is ultimately, in many cases, the benefit of others than the shareholders. Our functions are receptive in nature, and I may say that if any shareholder present knows of a promising and genuine mining scheme which requires financing we should not be unwilling to consider it, but only on terms favourable to this company—only on terms which are mutually beneficial, and not on terms involving large cash payments by this company. I need hardly say that it will be useless to submit any property which will not bear the strictest investigation. It has been asked how, with the comparatively small capital at our command, we are going to carry out the line foreshadowed in the scheme of reconstruction. In answer to this, I can tell you, gentlemen, that all these points were considered, all the possibilities duly weighed, before that scheme was formulated, and I can assure you that we can, and that we intend to, carry out our line. We are not infallible, and we lay no claim to be cleverer than other people; but if energy and business-like methods and devotion to your interests can make a success of this undertaking, that success will be attained. The present time appears to us to be an auspicious period for carrying out the programme indicated. There is every symptom of a considerable revival in mining business generally, and it seems evident that an exploring company like this, able to take advantage of all the favourable conditions of a revival after the period of financial stagnation from which we are emerging, and, moreover, with the best expert advice at its command, cannot fail to ultimately benefit its shareholders. With regard to finance, I can tell you that there is no call in contemplation —that the company has ample funds at its command. Moreover, we have obtained offers of substantial financial facilities from outside sources—from parties who have amply satisfied themselves of the stability of this company, and of the sound basis on which our business is conducted. We have already turned our serious attention, and with good result, to the gold fields situated in Western Australia. As a preliminary move in this direction we have been able to acquire an interest in an important syndicate, which has been formed to obtain the option of acquiring all those valuable concessions granted by the Government of Western Australia to the Hampton Lands Company, those concessions covering, as you are doubtless aware, some of the richest auriferous reefs in the neighbourhood of Coolgardie. I think you will say the company has done a good stroke of business when I tell you it has acquired this interest without any cash payment but for shares only, calculated at the market price of the day. But we have not stopped there; that is a minor matter. We are at present negotiating for the acquisition of a claim or claims in Western Australia, which we hope to acquire, in the Yilgarn district, where Coolgardie is situated. These negotiations are already far advanced, and every measure has been taken by us to go ahead at once should they be brought to a satisfactory conclusion. As, however, they are still proceeding, you will, I feel sure, agree with me that it would be unwise and injudicious to go into details now, and so prematurely make public our hand. I can, however, tell you that this is not the only iron we have in the fire. We have other operations in view, which we trust will be of a profitable nature. As to the pending negotiations, I think you may feel certain that, whichever way they terminate, you will have reason to be satisfied with the result; for if they fall through it will be because we persist in the conservative policy I have indicated as regards expenditure, and if they succeed you may rest assured that the success achieved will be one favourable to the interests of this company.

A Shareholder asked whether the shareholders would be informed from time to time how matters were progressing.

The Chairman: Directly anything is decided upon the shareholders will be informed by circular.

A hearty vote of thanks having been given to the directors, the meeting terminated in the ordinary manner.

DURBAN ROODEPOORT GOLD MINING COMPANY, LIMITED.

A splendid year's record.—Plans for the future.

The sixth ordinary general meeting of the Durban Roodepoort Gold Mining Company was held on Thursday, at Winchester House, the chair being occupied by Mr. John Brinton.

The Secretary (Mr. Lee Wright) read the notice convening the meeting.

The Chairman said:—Gentlemen, it cannot but be satisfactory to you to see so many shareholders and so full a board present. Before moving, as usual, the adoption of the report and accounts for the year ending December 31st, 1893, I should wish to be allowed to make a few remarks upon the report itself, and, in order to put myself thoroughly into accord with the meeting, I would ask that the report be taken as read, so that we may avoid going through details, of which the shareholders have been for some time in ample possession. We meet here to-day under circumstances of great gratification, because we have a very good report to lay before you as to the year which has passed. At the last meeting we ventured with some diffidence — because one should always speak of the future with great deliberation—to indicate what we thought there were good grounds for believing would be the results of the operations for the 12 months upon which we then embarked. We thought that the new conditions which had then opened up would enable us to lay before the shareholders at the end of another year a report which would thoroughly satisfy them. Now, I have a report of my speech given from the chair this time 12 months. I feel much honoured in being placed here, and in being able to follow the points indicated in the speech of the previous year, and I will ask for your attention to see how far the views that were then expressed were realised or not. In 1892 there were 59,599 tons milled, which produced 31,145 ounces of gold, of the value of £118,671. So much for 1892. Now in the year 1893 78,650 tons were milled, producing 37,833 ounces of gold of the value of £144,059. Now the average yield in 1893 was 9·63 dwts. to the ton. The average yield for the whole of the Randt mines might be placed at 9·55. So we have a better average than that of the whole of the mines in the Randt. That is very satisfactory. As regards the mining and milling and maintenance, I may say that the average cost was 18s. 3d. for 1892, while for 1893 it was 19s. 2d. The cost is slightly higher than last year, because the cost of mining is a little higher, probably owing to the increased depths of working, but the cost of milling and maintenance is considerably lower. I pass now from mining results to tailings treatment results. Last year, when I had the honour of speaking to you from the chair, I referred to the great importance of this question of the treatment of t ilings. In February of last year we commenced the treatment of tailings, so that we have not yet been more than 11 months at work upon them. During that period 79,760 tons of tailings have been treated, producing 22,751 ounces, which realised £71,518. Roughly speaking, these tailings have added 33 per cent. to the total revenue of the company. (Applause.) That is, I think, a fact which cannot be too largely accentuated. The cost of treating those tailings, including the royalty paid, amounts to 6s. 4d. per ton, and the profit on them is 11s. 6d. per ton. That is a good deal above the expectations formed twelve months ago. I shall allude again to our revenue for the year, which was £215,577, because, in the speech I had the honour of making last year from the chair, I ventured to predict, with a boldness which, perhaps, might have been challenged at the time, that, all things considered, we might be justified in hoping that the results of the working for the year on which we then entered might be put down to yield a revenue of £200,000. As a matter of fact, we have just heard that they have realised £215,577, and I think that ought to satisfy you as it has satisfied the board. (Applause.) A royalty of 1s. 4d. a ton and the working expenses about 5s. bring the cost of treating the tailings altogether to 6s. 4d. a ton. We have compared this with the results of similar workings by our neighbours, and we find that we are on the right side. Now the percentage of extraction of gold from these tailings has ranged from 67 per cent. up to 85 per cent. This we regard as very satisfactory, and it is above the anticipations which were formed at our last meeting. Now, as to the dividends, at our last meeting we foreshadowed that we should be able to give quarterly dividends. Some gentleman, whose zeal for dividends outran that discretion and modesty which, generally speaking, prevails in most persons minds, was daring enough to ask whether we meant to give 10 per cent. per quarter. I thought that was a very bold question, and I took sage counsel in my own breast and said we would give as much as we could possibly afford, but that we must not commit ourselves to 10 per cent. per quarter. But, gentlemen, we have exceeded the 40 per cent. which was asked of us; we have exceeded the maximum contemplated by the bold shareholder; we have paid quarterly dividends—10 per cent. for the first quarter and 15 per cent. for the three following, so that we have distributed 55 per cent. during 1893, and, moreover, we have already paid another 15 per cent. for the first quarter of 1894. (Applause.) Therefore, we have exceeded the boldest anticipations. According to the accounts the expenditure on capital account shows an increase of £1500 over the corresponding period for 1892, but you will observe that in addition to this a very considerable sum for depreciation, viz., £27,526, has been written off, and that appears in the profit and loss account as having been written off against machinery and plant. Now we have made several additions to the plant during the current year. We have laid down a valuable rock-drilling plant and hauling engines and gear at the Deep Level shaft head. We have added new pumping plant, electrical driving gear and engines. We have also been obliged to build another tailings dam and we have had to make additions to the cyanide of potassium works, and besides all these items necessary for the actual working and development of the mine, we have found it necessary to increase largely the buildings upon the property by the erection of a new manager's house, quarters for the married men, with reading rooms for the employés, all of which are necessary. This total expenditure, therefore, has to be regarded as an item so much in addition to what we have spent on the mine. We have felt it necessary that a property of this kind must always have considerable sums of money written off for depreciation, and I am sure the shareholders will find it in their interest to support that view. In regard to our financial position, you observe that the cash in hand at the end of the year was £20,960. I am pleased to be able to tell you that since that date the monthly returns of output and profits continue to be on the same satisfactory scale as last year. It will naturally be anticipated that I should say a few words in regard to the future policy of the mine, and what is our view as to the right way of continuing the working of the property. In page 6 of the report before you, you will observe some paragraphs headed "New Reduction Plant," and I will read to you that section only:—"During the current year it is intended to commence the erection of a new reduction plant on the northern boundary of the western block of claims, upon which block, in the development of the deeper levels, all future working will chiefly be centred. The plant will include stamps of a much heavier type than the present, capable of dealing more efficiently with the harder ore from the deeper levels, and of treating about 8000 tons per month. During the erection of this plant no interruption in the working of the present battery is contemplated, and there is every reason to expect that the rate of output and division of profits will be maintained. The site which has been selected is marked on the enclosed general map of the property. The directors will be pleased to place all details of the new work before the shareholders at the forthcoming meeting. With regard to the estimates submitted as to this contemplated outlay, the expenditure will be about £34,000, and that expenditure will be spread as far as possible over two years. This plant will include a new 60-stamp battery with stamps of 1050 lbs. each, equal to about 90 of our present stamps. Provision will also be made for extending these if necessary. There will also be new hauling and pumping engines, head gear and stone crushers, electrical transmission plant, boilers of the very latest and best construction, estimated to effect a reduction of 15 per cent. or 20 per cent. in the consumption of fuel. The whole will form a thoroughly concentrated plant on the most advantageous site for working the deeper levels on the best and most economical principles, and in conjunction with the cyanide works we may expect largely increased results. Pending the completion of this important work, we see no reason to doubt the maintenance of the present output, and no immediate interruption will be allowed in the workings. Of this we have the assurance of the local management. I do not know that, I need go into the details of the reasons which had led the directors to make this outlay, but you must be aware that in the purchase of the deeper levels a rearrangement of part of the plant was absolutely necessary, and under proposals now made we shall be able to fix the whole property in a concentrated form, and work it on a better system. But there is a still stronger reason for the outlay—and that is, that the extraordinary success of the treatment of the tailings, and the results which have come from it, have made it necessary to take these tailings out of the hole into which they were previously placed when they were regarded as of little value, and to put them in a position for prompt working at the least possible cost, so that they may not be allowed to get into a wet, slimy condition, but be treated promptly from the moment they are produced. There is a further reason which I have to give. As we are getting on with the working and sinking of these lower levels, which are just as rich as we expected them to be, we are coming upon the harder material, and this necessitates an extra power of crushing and stamping. Those are the three chief reasons which, together with others of less importance, have determined the directors to face this expenditure, and when I have told you that we do not contemplate being satisfied with 6000 tons, but intend going on to 8,000, I think you will say that our policy is a just one. I shall only now allude to the generous efforts and unremitting attention which have been given to your interests by the local board at South Africa. These gentlemen are always alive to every fact which bears upon the economy of the mine and of the production of satisfactory results. They are in constant communication with the London board, and we have always worked together most harmoniously. They have been thoroughly satisfied with the general managers, and I cannot speak more highly than I feel I ought to speak of the conduct of the management—of the general manager, Mr. Skinner, and engineer of the mines. It is a matter of great satisfaction to us that we should have men of such capability to conduct our operations. You must have capable men to manage your property, or else it does not avail anything, and I make the challenge that our mine is equal or superior to any other in the Randt in these respects, I ought also to bear testimony to the careful way in which the accounts are kept by the management in London. I can assure you that I cannot sufficiently praise the trouble and attention which Mr. Lee Wright, our secretary, gives to the drawing out of the elaborate tables in the report. I am quite sure that in these days when so much light is wanted on public companies and their proceedings, you, yourselves, will appreciate the value of these accounts in their present complete form, and if any gentleman is not able fully to understand them he can always be satisfied with respect to them, if he will call at the office. Straightforwardness, simplicity, and insight ought to be the characteristics of every board in these days. I hope you will understand we have done our best in the accounts we lay before you. I hope also that I carry with me your approval in the remarks I have made. (Applause.) I beg leave now to move:—"That the report of the directors and the accounts for the year ending December 31, 1893, be, and the same are, hereby received and adopted."

Mr. Parker seconded the motion.

Mr. Wyman asked how long the tailings would last.

The Chairman replied that as long as there was material to mine there would be tailings to treat, but he should think it probable that under the superior methods brought to bear in the original crushings it was likely that from time to time the tailings would deteriorate, while the quantity of gold produced from the original material would be larger.

Mr. Wyman asked whether there was any truth in the report that the company was about to amalgamate with another company.

The Chairman knew nothing whatever of such a proposal.

Mr. Elliott enquired when the 60 head of stamps would be in operation.

The Chairman replied that he hoped they would be got into operation within two years.

The retiring directors, Mr. John Napier and Mr. Alfred Jones, and the auditors, Messrs. Welton, Jones, and Co., having been re-elected, the proceedings terminated with a hearty vote of thanks to the Chairman and directors.

Palmarejo Mining Company (Limited).—A general meeting of the First Mortgage Debenture-holders of the Palmarejo Mining Company (Limited) was held on Wednesday, the 4th inst., at the company's offices, under the presidency of Mr. Seward Brice, Q.C. Debenture holders for £73,890 were present in person or by proxy. —After some discussion, the resolutions in the agenda notice were only passed by the required majority, and the meeting closed with a vote of thanks to the Chairman.

Elmore's Foreign and Colonial Copper Company.—In the Chancery Divison, on Wednesday, Mr. Justice Vaughan Williams had before him the petition of General Sir R. J. Meade for the winding up of Elmore's Foreign and Colonial Copper Depositing Company (Limited). Counsel stated that the petition came up on the last day of last sitting, and it stood over till now. In the interval the petitioner had died, and the executors had not proved the will, and under these circumstances it was asked that it should stand adjourned for a month. His lordship assented.

A terrible accident is often the result of a slight act of carelessness; therefore, we cannot guard too much against the habit of treating trifles with contempt. In dealing with our health, this is a matter of great importance. Many valuable lives have been prematurely lost through the neglect of a trifling cold or for want of attention being paid to the most simple of the laws of sanitation. In order to keep the body in a robust condition, frequent doses of Holloway's Pills should be taken; they purify the blood, whilst they cleanse the system from disease germs. For rheumatics, gout, sick headache, lassitude, liver and stomach disorders, &c., no other remedy can equal them.

THE EDITOR'S LETTER BOX.

*** We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.*

THE BALKIS LAND COMPANY, LIMITED.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—The directors have issued a notice for a meeting on the 11th inst., and coolly suggest increasing our capital of £260,000 in 520,000 10s. shares to £400,000 in 800,000 10s. shares in order to "take over" the Marabeu (Transvaal) Land Company (Limited). The provisional agreement is made between the respective secretaries. The shares of the Marabeu Company are not quoted; indeed, I have never seen them quoted in any paper. Are they saleable at any price? I imagine they are worthless, and the company, instead of being a "going concern," already "gone." What has this company done since its inception in 1890, and how much is it in debt? Where is and what is the value of its property? Though its authorised capital is £100,000, it has only succeeded in issuing 80,000 £1 shares, and of these 65,000 were allotted as fully paid to the vendors, the purchase consideration being £73,750, payable £8750 in cash and £65000 in fully paid shares.

The Balkis Land Company has already reduced its funds to the extent of £8800 by joining the Graskop reconstruction, and has a further liability of £4400 on its Graskop shares, which (as the final call has been made) must be paid on the 16th inst. We are asked to increase our already over-capitalised company by £140,000, and to hand over 280,000 10s. shares for a property of which we are told nothing, and think less. The directors content themselves with the bold assertion that such a course is "desirable!" They do not condescend to give us any reason. We require a reason, and a good reason. Can they give either? One of our directors is a director of the Marabeu Company; another is a director of the Graskop Company. The office of the three companies is identical. Balkis Land shares have already fallen on the announcement of this ridiculous proposal, and if the scheme be carried they will collapse altogether and become unsaleable.

If our company has already come to the end of its resources (supplied by the reconstruction in 1892), and requires amalgamation for self-protection, let us insist on this being done on mutually advantageous terms, and with a company owning a valuable property, and with cash at its bankers. Otherwise, it will be a case of the blind leading the blind, the result of which will be the inevitable "ditch" of early reconstruction and ultimate bankruptcy. If we have any assets left, let us keep them for ourselves. If we require funds, we shall not obtain them by increasing our nominal share capital over 53 per cent. Our land cannot run away, and may, in the distant future, become valuable. If we have not money to pay the £4400 due on the 16th inst. to the Graskop Company, let us be told this at once, and pay such an assessment on our present issued capital as will suffice to discharge our liabilities and provide us with funds sufficient to preserve us from a third reconstruction for some years to come. This would, at least, have the advantage of being done for ourselves, and not for undesirable outsiders.

If the Balkis Land Company is reconstructed, the capital of the new company should be reduced to £130,000 in £1 shares, every four old shares to be exchanged for one new one, with whatever liability thereon is necessary. I hope shareholders will attend the meeting in force, and unite in recording their emphatic veto against the directors' proposal.—I am, &c,

BALKIS LAND.

THE GOLD FIELDS OF NOVA SCOTIA.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—Nova Scotia has always been very poorly represented to capitalists, in England especially, but the returns of this country as a gold producer should not be thrown in the shade, as a good many times it has been looked upon as not worth investing in. There are over 50 gold districts, besides some few of silver, and an abundance of iron and coal, besides antimony, manganese, &c., and lots of drift, showing that there are many veins yet to be discovered.

Referring to the gold product, I must say that I am more than surprised to see the chances that are before capitalists in this country, and so few taking the advantages offered. The country is abundant in veins of quartz ore, veins up to 30 feet in width, giving from 1 dwt. up to 125 ounces per ton of quartz. About the best to my notice is owned by Messrs. Hardman and Taylor, in Oldham, Halifax Co., about 3 to 5 feet wide, giving 125 ounces per ton of ore. This is not merely a "pocket," as some may suppose, but a gradual produce of the yellow metal.

From the best data attainable, the output of gold in Nova Scotia was 21,080 ounces for the year 1892; but I have not seen the returns for 1893 yet.

How is it that some of our countrymen do not invest in Nova Scotia? I have been here mining now over 10 years, and can say that Nova Scotia is actually a rich province. Thanking you for space in your paper.—I am, Sir, yours respectfully,

PERCY JAMES WHITE, M.E.

Isaac's Harbour, Guysboro Co., Nova Scotia, March 22, 1894.

FRENCH IRON ORES.—The iron ore occurring in France may, says the *Colliery Guardian*, according to its mineralogical nature, be divided into five classes, viz., oolitic hydroxide of iron, brown hematite, other hydroxides of iron, red hematite and oligist iron, and spathic carbonate of iron. The first-named represents 86 per cent. of the whole, and is chiefly worked in Meurthe-et-Moselle, by 36 conceded mines and 11 open workings. All the iron mines and open workings of this department, the total production of which increased by 194,000 tons in 1892, are opened in the oolitic iron beds of the upper lias, and form three distinct groups in the neighbourhood of Nancy, Longwy, and Briey, which latter is not worked, however. All the iron ore raised is obtained from 20 concessions in the Nancy group and 16 concessions, with four groups of open workings, in the neighbourhood of Longwy, the former having yielded 1,406,000 tons and the latter 1,522,000 tons in 1892. The most important concessions forming part of the Nancy group are those of Chavigny, which in 1892 put out 292,000 tons; the Val-de-Fer, 272,000 tons; Ludres 167,000 tons; Marbache, 150,000 tons; Bouxières-aux Dames, 132,000 tons; and Pompey, 100,000 tons; while, among those in the neighbourhood of Longwy, the mines and open workings of Hussigny produced 469,000 tons; those of Saulnes, Micheville, and Moulaine, 252,000, 189,000, and 152,000 tons; and Godbranche and Longlaville, 153,000 and 104,000 tons respectively.

COAL MINING IN DUNFERMLINE.—Messrs. Henry Ness and Co. have opened up an important coal seam on the Dunfermline burgh lands at Higholm, Dunfermline. Three workable upper seams have been passed through in the shaft which has been sunk, and a few days ago the 8-foot seam was reached. This seam proves to be in two leaves, 6 feet and 4½ feet thick respectively, and below this the 5-foot and the Dunfermline splint seams are known to exist.

MINING IN CORNWALL AND DEVON:

NOTES ON WESTERN MINING, EDITORIAL AND OTHERWISE.

IT is a long lane that has no turning, and there are signs that the weary period of depression—one of the most severe and protracted that Cornish mining has ever experienced—is at length nearing its close. The price of tin has evidently touched its limit, and we may now look with some confidence for reasonably remunerative prices. Opinion is divided as to whether there is likely to be an immediate heavy advance, and it is quite possible that the price may remain much below what Cornish producers require to make ends meet, to say nothing of realising profits, for some little time. Another £20 per ton would be required by the majority of mines to place them in a fair position, and though many people are sanguine enough to anticipate that the metal may reach that figure before the autumn, there is not any immediate prospect of so large a rise. The turn of the tide has come none too soon, for business in Camborne and Redruth has for some time been practically at a standstill, and the prolongation of the crisis must have been attended with most disastrous effects.

ONE good effect of the depression has been the influence which it has brought to bear in the direction of checking the extravagance which, in more prosperous times, is apt to be rampant. Managers have been economising in every department, and have managed to carry on the mines at a cost which would not be deemed possible a few years ago. One interesting feature is that this cutting down of expenses has been effected without materially adding to the number of the unemployed. Cornish mining always has been, and always must be, more or less of a co-operative concern, and in this crisis the working miners have met the executives of the various concerns, and have readily, if not cheerfully, agreed to a reduction of wages rather than adopt an attitude which must have resulted in the discharge of a number of hands. Fortunately, most of the miners have been doing remarkably well, so far as production is concerned, during the period in which the market was most depressed. The returns are larger, and had tin been anything like £90 per ton during the last few months, calls would probably have been comparatively insignificant.

A BATCH of meetings will be held within the next few days. East Pool adventurers meet on Monday, and it is probable that a sufficient profit will be shown to enable the mine to retain its position on the dividend list. Dolcoath, Carn Brea, and Tincroft meetings will be held on April 17. The crowding of these three important meetings into one day is a source of great inconvenience and dissatisfaction, and the "auditing" of the accounts under such conditions must be more or less of a farce. It is doubtful whether at Carn Brea there will be any dividend at all; it is a very large and expensive mine to work, and although economy has been exercised here quite as much as in any mine in the district, the diminution of the revenue, owing to the low price of tin, must be enormous. At Tincroft a small dividend is expected, but if the shareholders are fortunate enough to obtain it, it will not be from the sales of tin so much as from the increased revenue from copper and arsenic. At Dolcoath, the result of the past three months' working is, as usual, somewhat uncertain, and very much depends on whether Captain Josiah Thomas has put into practice his suggestion that during the era of low prices the output should be restricted. The general opinion is that a dividend of about 10s. per share will be declared, though some of the more sanguine shareholders are anticipating 15s.

SOME of the mines whose shares have been quoted at very low prices have recently been doing very well. South Crofty, which a year or so ago seemed to be on the verge of extinction, has taken quite a new lease of life, and the mine is regarded as one of the most promising speculations in the county. The vigorous policy which has been adopted here is showing excellent results, and the mine is developing into what looks like a permanent and profitable concern. The returns at the forthcoming meeting will show a further increase, and a very small call is likely to suffice. At South Frances the good lode which they have found in the 246 going west maintains its high value, and a profitable piece of ground must be already laid open. The executive at the last meeting were very glad to find shareholders ready to take up relinquished shares, and many were offered at a few pence only a week or two later. The shares now command a price of about 35s., so that those who took them up at that time have not had a bad bargain. In West Frances and South Condurrow they have also met with good improvements, so that altogether mining on the south side of Carn Brea hill is decidedly in a healthier condition than it was earlier in the year.

ESTIMATION OF SULPHUR IN COAL.—A method whereby the sulphur in coals may be estimated, and their suitability for gas-making determined before purchase, has been introduced by Herr W. Hempel, an authority on coal gas in Germany. The coal to be tested is powdered and pressed into a little platinum wire cylinder, to which a long platinum wire is attached, and then burned. The combustion is effected in an ordinary glass bottle, which is fitted with a trebly perforated indiarubber stopper. Through this passes a tube with a glass stopcock, and which widens out into a cylinder; also two glass tubes, to the lower ends of which two thick platinum wires are fused. One of these wires carries the platinum cylinder or basket already referred to. A little mercury is poured into the tube so as to establish sure contact with the wires which lead the electricity. When the current is passed the platinum basket becomes white hot, the combustion of the coal is effected, and the gaseous products containing the sulphur compounds are led off through the stopcock and examined chemically. There is practically an improvement on the more complex method originally devised by Berthelot. —*Iron and Coal Trades' Review.*

THE ANTWERP EXHIBITION.—A meeting of the consultative committee in connection with the Antwerp Exhibition Committee was held at the London Chamber of Commerce, on Wednesday, Sir A. K. Rollit, M.P., presiding. The Chairman said he had received information from Her Majesty's Consul-General for Belgium that the whole of the space originally alloted to him for Great Britain had been taken, and he had been compelled to apply for a supplementary allotment in order to meet further demands for space. Part of the central avenue adjoining the British section had also been occupied by British exhibitors, but this would not suffice, as applications for space were being received almost daily. The Indian Government had also secured an allotment of space. The grant made to the London Chamber of Commerce by the Foreign Office in respect to the exhibition had been paid, and he did not think he could do otherwise than acknowledge on that occasion the great courtesy of Lord Rosebery and Sir E. Grey, and the aid they had so readily given. The opening of the exhibition would take place on Saturday, May 5, when the King would perform the ceremony.—Sir George H. Chubb expressed a hope that the Cape would also be represented so far as exhibits were concerned.

REPORTS UPON MINERALS, TRADE, &c.

THE COPPER MARKET.

MESSRS. JAMES LEWIS AND SON'S monthly report on ores and metals, dated Liverpool, April 2, 1894, says:—Copper—Opening at £40 12s. 6d. on the 2nd ult., good merchantable copper receded to £40 for cash on the 6th, but subsequently advanced to £41 10s. on the announcement of a reduction in the stock of 1349 tons on the 19th. From this point there was a reaction to £41 2s. 6d. on the 21st., and to £40 15s. on the 28th, the closing value to-day, after sales at £40 12s. 6d., being £40 13s. 9d. for cash and £41 5s. for three months' prompt. The competition of American ingots and cake copper has depressed the value of best selected and tough cake to £44 10s. for the former and £43 10s. for the latter, the consumptive demand having been interfered with by the holidays. Little or no manufactured copper has been sold for India. In New York a considerable quantity of Lake copper has been sold at 9¼ cents. per lb. and of electrolytic at a lower price than this, which, however, is not definitely known. The consumptive demand is gradually increasing and promises to further improve. For export to Europe ingot copper offers at the equivalent of about 8·85 cents. per lb. The results we give of the working of the second largest copper mining company in Montana and of two Lake Superior mining companies show clearly that at the present price of copper and silver, which are considerably below those ruling during the period to which the reports refer, the production of copper in the United States, except at a few mines, is far from profitable. The directors of the Tharsis Company recommend a dividend of 12½ per cent. per annum for the year 1893, after writing off £47,343, leaving £14,601 to be carried forward. The report of the Boston and Montana Company for the 18 months ending 31st December, 1893, shows a gross mining profit of $844,275, the total quantity of ore mined being 231,630 tons, the average percentage of 99,305 tons reduced at the mines being 9·72 per cent., and of 218,958 tons treated at Great Falls, 7·62 per cent. $399,938 were expended on construction account, and $351,500 paid for interest on bonded debt, premiums on bonds redeemed, &c. $625,000 were obtained from the sale of new stock, and $211,000 of bonds were bought, redeemed, and cancelled. The capital stock is $3,750,000, upon which no dividend has been paid since November, 1891. The bonded indebtedness is $1,456,000. The report of the Osceola Mining Company of Lake Superior for the year 1893 gives the production as 3358 tons (2000 lbs.), sold at an average price of 10·95c. per lb., and realising a net profit of $102,466. The cost of production, including ·67c. per lb. for construction, was 9·48c. per lb. The report of the Kearsage Mining Company of Lake Superior for the year 1893 gives the production as 813 tons sold at an average price of 10·87c. per lb., the cost of production being 11·13c. per lb.

Messrs. HARRINGTON and Co.'s copper report, dated 2nd April, 1894, says:—Chili charters for the second half of March are advised as 750 tons, which, with the same figures for the previous fortnight, makes 1500 tons for the month. The total since 31st December is 4750 tons, against 4650 tons same time last year. Exchange 13 3-16d. Since our last the market for G.O.B.'s and G.M.B.'s has been quiet, and values have fluctuated between £41 8s. 9d. and £41 13s. 9d. cash and forward, and £40 12s. 6d. and £41 5s. respectively, at which we close steady. Total business about 5000 tons. The total stocks in Liverpool, Swansea, London, and Havre are 42,747 tons, against 42,414 on the 15th ult., showing an increase of 333 tons for the fortnight. The figures for the previous fortnight showed a decrease of 1350 tons, making a decrease for the month of 1017 tons. The stocks include about 1200 tons of copper sold, but not yet delivered to smelters. The visible supply for the fortnight is 46,501 tons, against 46,068 tons on the 15th March, showing an increase of 567 tons. The month's figures show a decrease of 1043 tons. The stock of English G.M.B.'s in Liverpool has been reduced from 4 to 3 tons. Refined and manufactured sorts are dull. Quotations being:—Tough cake £43 to £43 10s., best select £44 to £44 10s., Indian sheet £49, strong streets £52, and yellow metal sheets 4½d. per lb.

Messrs. HENRY BATH AND SON'S copper report, dated April 3rd, has the following:—The Home and Indian markets remain without change. As to the United States, prices have remained nominally the same. There are, however, symptoms of a revival of demand for consumption which it is hoped will further develop itself. The exports for the last half of March are advised as 3700 tons. A cargo of about 1000 tons Boleo matte has arrived at Queenstown per *Independant*, and is reported to have left for Antwerp to discharge direct to consumers. Outside of our figures the arrivals and deliveries at Hamburg, Rotterdam, and Antwerp amount to about 1550 tons. Imports of American copper into England have been 1296 tons, and into France 350 tons, or 1646 tons against 1374 tons last year. Actual deliveries for the fortnight have been 4379 tons against 4712 tons imports. The stocks have increased 333 tons. Total visible supply shows 46,597 tons against 46,164 tons last year. Furnace material is still in short supply, the only sales we have heard of are 1650 tons of Spanish, Chili, and Peruvian ore on spot and to arrive at 7s. 3d. to 7s. 6d.; 200 tons of Chili regulus at 8s., 1½d.; 1800 tons of Quebrada regulus, to arrive on private terms; and 62 tons of Spanish precipitate at 8s. 3d. per unit. Sulphate of copper steady; £15 10s. cash and forward. Tin firm; £69 12s. 6d. cash, £70 10s. three months. Spelter £15 15s. to £15 17s. 6d.; English about £16 10s. Blende of 50 per cent. is worth about £3 4s., and calamine about £3 6s. 6d. Lead quiet, £9 2s. 6d., with silver 50 to 80 ounces about £9 7s. 6d. Lead ore of 70 per cent. is worth about £4 per ton. Pig iron: Closing quotations for Scotch pigs are about 43s. 2d.; Middlesbro', 36s. 5d.; Hematite, 45s. 3½d. cash. Antimony dull. Star regulus about £36. Ore irregular, about £9 to £10 for 50 per cent. good quality and produce. Crude £15 to £16 per ton. Quicksilver quiet; official price, £5 10s. per ton. Seconds irregular, owing to a fire at quicksilver warehouse Bar silver 2s. 4½d. per ounce standard. Discount: The bank rate remains at 2 per cent.

MINERALS AND METALS.

Messrs. S. W. ROYSE and Co.'s report, dated Manchester, March 31st, says:—Minerals: In this branch also there has latterly been a noticeable want of animation. There were expectations of an improvement in iron ore, but these expectations have so far not been realised; prices indeed are steady, but the volume of business is disappointing. The imports during February last are less than during February last year, and in the imports during the two months ending February 28th last, as compared with those during the corresponding period of 1893, there is a decrease in weight of 90,679 tons, and in value of £61,632. Chrome ore and manganese ore are moving moderately well at steady prices, especially in better qualities. Prices of foreign brimstone are low, and there is a falling off in the imports for last month as compared with those for February, 1893, although the two completed months of this year show a slight improvement upon the corresponding period of last. With the lower rates of freight now quoted, we are expecting an improved demand for China clay; indeed, the higher qualities are already moving better, but the lower grades are still slow of sale. Crude ochres continue to be freely offered.—Metals: This has been an uneventful month in the pig iron trade. There has not been the improved demand that was expected; in fact, only a moderate amount of business has been passing, and the fluctuations in values have been unimportant, present prices of both Scotch and Middlesbrough iron being just a little above those current at the beginning of the month. Now that the holidays are over, fresh business is being looked for, and is wanted in both the pig iron and the manufactured iron branches. Copper has fluctuated a little, and closes at about the same price as at the beginning of the month, with an easing tendency. Tin has gained considerably during the month, but is now easing again. Spelter is practically unchanged, and is steady. Lead has given way slightly, and is at present easy.

THE DIAMOND MARKET.

In his report, dated Hamburg, April 3, Ludwig J. Lippert says: Since my last report of March 8 the tendency for De Beers was mostly favourable. They rose several times to 16¼ and 16 9-16 respectively, they always recovered and closed yesterday again at 16⅜. Some expectations, I understand, are entertained of an early reappearance of diamond buyers from the United States and of an improvement in the general position of trade and finance on that continent. I doubt that they will be realised. The difference about the seignorage bill between the President and the houses bids fair to be a long winded one, and also to keep the whole tariff question in suspense. Bad legislation is a great evil for any country, but the worst is the uncertainty what will be the law or what not. First debentures are 105 to 105½, second debentures are 104¾ to 105¼, Bultfontein Obligations are 102½ to 103. There was a considerable fall some weeks ago in both classes of debentures, which were sold in large parcels at 104. This price corresponds almost exactly with the rate of redemption and interest for two months, and reflects correctly the anxieties of owners who felt themselves in a vice between conversion and redemption. Since then both values have recovered their former position, as a conversion of all debentures and obligations has met with such general disapproval that it became practically impossible, and latterly the idea of a conversion of the first debentures only has been mooted in different quarters. I do not think that even this will happen shortly, but I have frequently pointed out that at some time or other it certainly will take place, and intending owners of debentures should take this into account when purchasing. In fact, this sentiment has latterly come into evidence clearly, though probably unconsciously, by the considerable rise in De Beers Bultfontein Obligations. The rise I do not think due solely or principally to the falling due of the interest on 1st inst., but mostly to the knowledge of purchasers, that this stock though redeemable by drawings at par can only be altogether redeemed at 103.

THE TIN MARKET.

Messrs. DE MONCHY and HAVELAAR'S monthly circular, dated Rotterdam, March 31, says:—The feeling in our tin market has varied a good deal during this month. Fluctuations were both wide and sudden, but the chief tendency has been upward. Large shipments from the Straits to Europe, increasing the visible supply, caused the price to sink early this month to the lowest point touched ever since 1879 (fl. 38⅛ for Billiton), but speculators, tempted by the low price, availed themselves of this opportunity, taking several large parcels for investment. Since then the market with a regular business has steadily improved, the month closing fl ⅜. higher for Banka and fl. 2 higher for Billiton and Straits, compared with February 28. The Dutch Trading Company's second sale was held on the 29th instant, when 28,600 slabs Banka were sold from fl. 43½ to fl. 44, average fl. 44, and 806 ditto Singkep were sold at fl. 41⅞. The next sale will be held towards the end of May. Banka spot was very little dealt in on account of the limited stock on hand. From fl. 41¼ the price receded to fl. 41⅛, but since, with some fluctuations, improved to fl. 45, the sale, however, bringing the price down to fl. 44, closing thereat with rather buyers. The variations in the price of next sale delivery were successively fl. 42⅜, fl. 41½, fl. 44½, fl. 43¼, fl. 44½, today's quotation being fl. 44½. Billiton cash from fl. 39⅜, gave way to fl. 38⅛, then improved to fl. 41½, and, after a momentary reaction to fl. 40½, advanced to fl. 42½, closing fl. 41⅞, with sellers. Straits cash moving about at a par, and forward of both descriptions usually fetching from fl. ⅜ to fl. ½ premium. About 12,000 piculs Billiton will be offered in public sale at Batavia on Wednesday, 18th of April next.

PIG IRON MARKET.

Messrs. W. CONNAL AND CO.'S monthly circular on the pig iron market has the following:—The market during the month has been quiet with little business doing. Opening at 43s. 1d. the price varied from 42s. 9½d. to 43s. 4d., and closes at 43s. 1d. cash sellers. The market for Middlesborough warrants has been firm. The opening quotation was 36s. 3d., sellers. Business has been done from 35s. 11d. to 36s. 3½d., closing at 36s. 3½d. cash sellers. The stock of Scotch pig iron in the yards of Connal and Co. (Limited) shows a decrease of 1035 tons till 30th inst., and now amounts to 315,829 tons, with warrants in circulation for 301,000 tons. The stock of Cleveland pig iron in the yards of Connal and Co. (Limited) shows an increase of 1384 tons, and now amounts to 111,545 tons, with warrants in circulation for 98,100 tons. The stock of Middlesborough hematite in their hands amounts to 37,335 tons, with warrants in circulation for 33,500 tons.

CRUDE PETROLEUM AS FUEL.—In a report to the Foreign Office, Captain R. C. Clipperton, Her Majesty's Consul at Philadelphia, transmits an extract from the *Philadelphia Press*, referring to the increasing use of crude petroleum as fuel in the United States. Crude petroleum, which came into use in Detroit some eight years ago, is now much more extensively used than natural gas. It has displaced coal to a very large extent, but only finds its way into a very limited number of homes. It is principally used by factories for generating steam power, by iron and steam plants for forging these metals, in business blocks for steam heating purposes, and is used in about 90 factories, business blocks and two brick-yards, in which the aggregate consumption of this fuel is about 5500 barrels per day. The petroleum supplies come from the Ohio and Illinois oil fields, the principal centres of which are at Lima and Keystone respectively. It comes by rail in tank cars, which have a capacity ranging from 80 to 190 barrels. The principal consumers purchase directly from the oilfields in car lots, but there are two dealers who retail in less quantities, and whose aggregate daily sales are about 250 barrels. The cost of petroleum delivered in this city in car loads is about 70 cents per barrel, so that the annual consumption is about $1,232,000. An hydraulic device has been invented, which feeds petroleum uniformly into furnaces, and also handles it, thereby saving much material and labour. The main feature of the invention is an airtight tank, in which the oil is kept, and an arrangement by which water can be let into or drawn from the bottom of the tank. By letting water into the tank, the oil is forced to the top, and thence through a pipe to the point where it is consumed. The petroleum is also handled by being run from the railroad car tank, through a hose into the ground tank until the latter is full, when the weight of the petroleum forces the water below it through a pipe in the bottom, and the water then falls into the sewer. When it is desired to load the petroleum from the ground tank into a wagon tank, the operation is the same as in feeding it into the surface. Water is let into the bottom of the ground tank, and this forces the petroleum up and through a hose at the top into the wagon tank. It is claimed that, by feeding the oil into the furnace by the hydraulic method described, a very important saving is effected, as by the uniformity of the feed, the oil is entirely consumed, which is not the case where it fed by gravity alone.

MEXICO AND THE SILVER QUESTION.—The Presidential message which was read at the opening of Congress stated that owing to the opposition of powerful foreign nations it was impossible to arrive at an international arrangement on the silver crisis. Mexico would consequently have to adopt special measures, which would include the realisation of great economies. The Government would submit the necessary Bills to Congress. The revenue from internal sources was in conformity with the Budget estimates, while the customs receipts showed a decrease.

SOUTH STAFFORDSHIRE COAL WAGES.—On Monday an important meeting of the South Staffordshire Coal Wages Board was held. The men proposed a new scale based on 3s. 4d. per day for thick coal getting when the selling price of coal averages 4s. 9d. per ton; they asked for an advance of 1d. per day in thick coal wages for every 1½d. in prices per ton. The employers agreed to grant this if the new scale was worked automatically for stated periods, instead of being subject to notice. The men's delegates promised to consult their constituents.

COMPANIES AND THEIR DOINGS.

Reports, Balance Sheets, Dividends, &c., of Mining, Railway, Banking, and other Companies.

MINING COMPANIES.

"The Jumpers" Gold Mining Company (Limited).

THE directors' summary of operations for the month of February: 100 head mill: Mining, 8288 tons, £3435 10s. 8d.; hauling and pumping, 8180 tons, £1485 8s. 2d.; transport, 8288 tons, £208 18s 9d.; milling, 8293 tons, £2511 3s. 6d.; charges, 8293 tons, £237 6s. 6d.; redemption on 8180 tons, £2045; total, £9923 7s. 7d.; cost per ton, 24s. 6·26d.; gold, 4241·81 ounces, realised £15,694 14s.; concentrates, 768·33 ounces, £1767 17s. 4d.; total, £17,462 11s. 4d.; profit for month, £7539 3s. 9d. Total expenditure: Mining and milling, £7878 7s. 7d.; plant, &c., £158 5s. 2d.; mine development, £2107 19s. 6d.; new tailings dam, £104 15s.; buildings, &c., £555 16s. 3d.; in all, £10,805 3s. 8d. Total receipts: Gold and concentrates, £17,462 11s. 4d.; tailings sold, £600; blanketings sold. £500; in all, £18,562 11s. 4d. Balance. £7757 7s. 10d. Driven and sunk during month, 610 feet. Warrants for dividend No. 5 have been forwarded to shareholders In the official return of the Chamber of Mines, 1221·6 ounces of gold are returned as recovered from the Jumpers' tailings in January and February. This return is from the treatment of the 100,000 tons of tailings sold to the African Gold Recovery Company, and for which payment is being made at the rate of £600 per month.

The Leadhills Silver-Lead Mining and Smelting Company (Limited).

The directors report that shortly after the last general meeting in September, they had an interview with Captain Thomas Hope, M.P., at Edinburgh, when an arrangement was come to by which Lord Hopetoun practically reduced the royalties for four years to 10 per cent. of the divisible profits on condition that certain operations were carried out at the mines. Since this arrangement was made the stipulated operations and the general work have been vigorously prosecuted. Wilson's and Jeffery's shafts on Brown's vein were each sunk 15 fathoms in the short time of three months, and the 160 fathom level is being driven north and south of the two shafts respectively in order to open up the lode at that depth. The work above on this vein has been carried on with expedition, and some rich ore ground has been developed at the 85 fathom level, a continuation of which it is hoped will shortly be proved in the 100 fathom level. The directors deeply regret to have to record the death, on the 11th February, of Mr. Thomas Newbigging, who for many years was the underground agent, and since 1878 has been the local manager of the mines and smelting works; his intimate knowledge of the mines and the workings, acquired in a life-long acquaintance with them, makes his loss a serious one. Captain Wm H. Paull, for many years manager of lead mines in Wales under Messrs. John Taylor and Sons, has been appointed local manager in his place, and will reside at Leadhills.

The Don Pedro Gold Mining Company (Limited).

The report of the directors, made up to the 30th September, 1893, states:—The returns of gold amount to £9371 5s. 7d. against £6519 9s. 8d. for the previous year. The directors consider the result of the year's work far from satisfactory. Changes made in the management, it is hoped, will lead to an improvement The directors call special attention to the statement of Mr. Holman, the mine manager, supported fully by Mr. Dawson, the superintendent, that the mining work cannot be carried on in a miner-like and economical manner unless the driving of the 50 and 60 fathom levels be pushed on considerably ahead of the stoping, and the shaft, which is now down to the 60 fathom level, be sunk deeper to draw the ground. The directors appeal to the shareholders to subscribe £10,000 in debentures of £25 each at 10 per cent. discount, and bearing an interest of 10 per cent., payable half-yearly.

— The directors of the SIERRA BUTTES GOLD MINING COMPANY (LIMITED) report that after carrying £2000 to the reserve fund, and including £3857 16s. 1d., the moiety of profit from the Uncle Sam Mine, a balance remains to the credit of profit and loss of £3935 16s. 3d., out of which they recommend that a dividend of 6d. per share, free of income-tax, amounting to £3062 10s., be declared, and that the balance remaining be carried forward. The accounts of the Plumas Eureka Mine show a profit of £4719 13s. 6d., inclusive of £3857 16s. 1d., the moiety of profit from the Uncle Sam Mine. This, with the balance brought forward, enables the directors to recommend that a dividend of 9d. per share, free of income-tax, amounting to £5273 8s. 9d., be declared, and that £3694 11s. 11d. be carried forward.

— The directors of the GELDENHUIS ESTATE AND GOLD MINING COMPANY (LIMITED) report for the month of February:—Quartz mined, 9142 tons (2000 lbs.); milled (80 heads), 9182 tons of 2000 lbs.; yielding smelted gold, 3555·83 ounces; valued, £12,975 15s.; concentrates sold (say 262 ounces), £638 12s. 6d.; total, 3817 ounces; valued, £13,614 7s. 6d. Cost, £7072 13s. 3d.; expended on mine development, £2655 15s. 3d.; total expenditure, £9728 8s. 6d.; profit for month, £3885 19s. Capital account: Expended on machinery, new shafts, &c., £17,840 1s. 9d.; driven and sunk, 775 feet.

— The payment on April 21st of a dividend of 6d per share. in the NEW QUEEN GOLD MINING COMPANY (LIMITED) is announced.

— The directors of the SAN PABLO NITRATE COMPANY (LIMITED) have declared an interim dividend of 7½ per cent. (being 7s. 6d. per £5 share), less income tax, on account of the current year, payable 16th inst.

— The secretary of the ISLE OF MAN MINING COMPANY (LIMITED) states that he sold on March 31, 100 tons of the company's ore at £6 11s. 6d. per ton.

— The LION (MOZAMBIQUE) GOLD COMPANY (LIMITED) has gone to allotment This is the first subsidiary company of the Gold Fields of Mozambique (Limited) in which La Plata is largely interested.

— The directors of the COLUMBIAN HYDRAULIC MINING COMPANY (LIMITED) have declared a dividend of 1s. per share, free of income tax, payable on April 24, 1894, on the shares as they stand this day on the register of members.

— The MYSORE GOLD MINING COMPANY (LIMITED) has sold the gold obtained during the month of February last, which realised £18,381 18s. 3d.

— The NUNDYDROOG COMPANY (LIMITED) has sold the gold obtained during the month of February last, which realised £6376 11s.

— The BALAGHAT MYSORE MINES (LIMITED) has sold the gold obtained during the month of February last, which realised £1394 1s.

— The CHAMPION REEF GOLD MINING COMPANY OF INDIA (LIMITED) has sold the gold produced in February for £11,771 15s. 8d.

— The OOREGUM GOLD MINING COMPANY OF INDIA (LIMITED) has sold the gold obtained in February for £22,129 8s. 8d.

— Holders of scrip certificates to bearer for shares in the CHAMPION REEF GOLD MINING COMPANY OF INDIA (LIMITED), issued 18th July, 1892, are requested to present their scrip at the Office on or after the 12th instant, in order that the dividend of 2s. per share due that day may be paid thereon.

— The JUBILEE GOLD MINING COMPANY (LIMITED) have declared a dividend of 30 per cent., payable on the 10th day of May, to all shareholders registered on the 5th day of August.

— The directors of the CAYLLOMA SILVER MINING COMPANY (LIMITED) have declared an interim dividend of 1s. per share, free of income tax, payable on the 12th inst.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

ALADDIN'S LAMP.—The following cablegram has been received from the mines:—"180 tons of ore have been crushed during last fortnight, yielding 950 ounces of gold. We have now connected winze No. 1 with winze No 2 by a drive along the contact on the 400 feet level; have commenced rising on the veins; the formation is favourable for development of ore bodies."

BALAGHAT MYSORE.—The directors have received a telegram from Captain Jos. Pryor, giving the return of gold for the month of March as follows:—"350 tons of quartz crushed, produced 409 ounces of gold."

BRILLIANT BLOCK.—Crushing for fortnight ending 31st March:—"Tons crushed, 716; ounces gold obtained, 1069; approximate value, £3675. Dividend 6d. per share, payable Saturday, 7th April. Balance at credit of revenue after paying this dividend, £2500."

BONNIE DUNDEE.—The directors have received the following cablegram from the managing director at Charters Towers:—"Have crushed 290 tons of quartz for a yield of 213 ounces of gold. The new (No. 3) shaft has reached a depth of 510 feet." The approximate value of this return is £700.

CHAMPION REEF.—The directors have received a telegram from the mine giving last month's return of gold as follows: "Crushed 2085 tons; obtained 3048 ounces of gold; tailings 219 ounces; total 3267 ounces of gold. Have cut lode in crosscut 630, Garland's shaft, 7 feet wide, assaying 1 ounce 15 dwts. per ton."

CITY AND SUBURBAN.—Last month's crushing yielded 4190 ounces.

CRAVEN'S CALEDONIA.—The following cablegram has been received, giving result of crushing for past fortnight, dated Charters Towers, March 31:—"235 tons, yielding 450 ounces gold. Dividend of 3d. per share, payable 5th April. Still crushing; mine is improving."

EL CALLAO.—Messrs. Baring Brothers and Co. (Limited) have received the following telegram: "1326 to 1350 ounces of gold produced for past month by El Callao Mine. 2276 to 2300 ounces by the Colombia Mine; dividend of 16 francs declared by the Colombia Company."

ELKHORN.—Bullion produced in mill for the week ending March 31, 9100 ounces.

FORBES REEF.—A telegram has been received from the mines, stating that the result for the month of March, 1894, is 116 ounces of gold.

GELDENHUIS ESTATE AND GOLD.—Copy of cablegram received from Johannesburg, April 2:—"Seventh annual meeting of shareholders will be held on May 16."

GOLDEN GATE.—The manager cables: "The present depth of the bore from the surface is 645 feet."

JAVALI.—The directors are in receipt of advices from their manager, dated February 18:—"During the past month 10 stamps worked 28 days, crushing 385 tons of quartz, which yielded 102 ounces of gold, and from the arrastras 13 ounces. Total 115 ounces of gold, an average of 6 dwts. per ton. Cost for January, £263. Remittance valued at £230."

KABOONGA.—The following cablegram has been received from the manager at the mine:—"South-west drive 1054; south-east drive 1069; borings in south-west drive 161. I expect will carry it through."

KOFFYFONTEIN MINES.—During the month of February 19,949 loads of yellow ground were hauled, and 14,874 loads washed, yielding 881½ carats at an estimated cost of £783 9s. 6d.

LANGLAAGTE ESTATE.—The London agents of the Langlaagte Estate and Gold Mining Company (Limited) have received a cable announcing a dividend of 12½ per cent. for the quarter ending March 31, payable after receipt by the head office at Johannesburg of the list of London shareholders. The transfer books are closed till the 7th April.

LANGLAAGTE ROYAL.—Result for March 1337 ounces from 4155 tons; 40 stamps running 29 days.

MAIN REEF.—During March crushed 3410 tons; obtained 1240 ounces of gold.

MARBELLA IRON ORE.—The directors have received the following telegram from the mines:—"Output of ore for March, 670 tons."

MAY CONSOLIDATED.—The following cable message dated Johannesburg, April 5, has been received at this office: "The yield of gold during the past month (March) was 2050 ounces from 5300 tons crushed. Mill running 37 days."

MESQUITAL DEL ORO.—The following cablegram, giving the result of the March mill run, has been received from the mine: "50 stamps ran 637 hours (26 days 13 hours); quantity of ore crushed, 3116 tons; bullion produced at clean-up, 1062 ounces; value about £3818. Have also remitted copper bar, value about £47."

METROPOLITAN GOLD.—During February 20 stamps working 26½ days, crushed 1441 tons, yielding 510 ounces 12 dwts. 25 ounces also recovered from scrapings. Total, 535 ounces 12 dwts.

MONTANA.—The secretary states that, by cablegram from the mine, the directors are informed that the total output for March was:—Gold, 2420 ounces; and silver, 16,700 ounces; and that the estimated realisable value of the same was $57,400. The tonnage of ore milled during the month was 6005 tons, 105 stamps having been in operation. The expenditure was as follows:—Working expenses on revenue account, $33,400; outlay on developments, $13,000; extraneous expenses, including insurance, $1150; on permanent improvements account, $100, equals $14,250; total, $47,650.

MOUNT MORGAN.—The following telegram from the head office, Rockhampton, has been received:—"We pay £25,000 on April 3, being dividend of 6d. per share (free of dividend tax) for the month of March."

MOUNT LEYSHON.—The Mount Leyshon (Limited) have received the following cablegram, dated 4th inst. from their manager at Charters Towers, giving the fortnightly crushing:—"1600 tons crushed 257 ounces gold; 40 stamps mill ran 288 hours."

MYSORE.—The directors have received a telegram from Mr. R. Hancock giving the return of gold for the month of March as follows: "4800 tons of quartz crushed produced 3428 ounces, also 605 ounces were obtained from tailings, making together a total production of 403 ounces of gold."

MYSORE REEFS.—The company has received the following telegram from the mine, dated April 4:—"Have intersected lode in vertical shaft. Width of lode 8 feet 9 inches. Average of five assays, 5 dwts. of gold per ton. Ore contains visible gold."

MYSORE WEST.—MYSORE-WYNAAD CONSOLIDATED.—Tank block: The mining manager telegraphs on the 4th inst. that 70 tons were crushed during the month ending March 31, of which 35 tons were quartz, yielding 35 ounces of gold."

NEW CLEWER ESTATE AND GOLD.—Results for March: From mill working 29 days, crushed 1910 tons, yielding 606 ounces of gold. From cyanide works, treated 2232 tons, yielding 1185 ounces of gold; total yield, 1791 ounces of gold. Total value, £5071; estimated profit on month's work, £1750.

NEW HERIOT.—"Last month's crushing yielded 3888 ounces."

NEW UNIFIED MAIN REEF.—Result for March: 1033 ounces, 40 stamps running 29 days.

NEW CHIMES.—Result of last month's crushing yielded 2543 ounces of gold.

NEW WELSH SLATE.—Output for the 4 weeks ending March 24th was 592 tons.

NIGEL.—"Last mouth's crushing yielded 2274 ounces battery, 1972 ounces cyanide."

NUNDYDROOG.—The directors have received a telegram from Mr. F. W. Grey, giving the return of gold for the month on March as follows:—"2400 tons of quartz crushed produced 1628 ounces, also 141 ounces were obtained from tailings, making together a total production of 1769 ounces of gold."

OOREGUM.—The directors have received a telegram from the mine dated 4th April, giving last month's return of gold as follows:—3428 tons of quartz produced 5789 ounces of gold, 3370 tons of tailings produced 813 ounces of gold; total production for the month 6602 ounces of gold.

ORION.—The following information has been received by cable for February:—"Crushing plates, 1150 ounces; tailings cyanide, 1500 ounces."

PAARL CENTRAL.—A cablegram has been received from the head office at Johannesburg, stating the following results for last month (March):—"Mill crushed 4393 tons, yielding 1770 ounces of gold. Cyanide works yield 551 ounces of gold, total 2321 ounces of gold; total value £7800."

PESTARENA UNITED.—Gold return for March, 486 tons of ore produced 571 ounces of gold, equal to 1 ounce 3 dwts. 12 grains per ton. Return for February, 309 ounces.

SALISBURY.—"Last month's crushing yielded 1750 ounces."

SHEBA.—The directors have received the following cablegram from the general manager for the month of March:—"3650 tons (2000 lbs. per ton) of ore crushed yield 3355 ounces; 6050 tons (2000 lbs. per ton) of tailings yield 3115 ounces: 58 tons (2000 lbs. per ton) of concentrates (assay value) 347 ounces; total, 6817 ounces."

STANHOPE.—"Last month's crushing yielded 720 ounces battery, 515 ounces cyanide, 1850 tons crushed, £3000 expenses, £1250 profits."

TOLIMA.—The directors have received the following cablegram from their superintendent:—"Estimated profit for March, £4000; 90 east main lode, valued at £80 per fathom; 140 east from No. 1 winze, valued at £80 per fathom." London office note.—Silver valued at 27½d. per ounce.

UNITED IVY REEF.—The crushing for last month yielded 253 ounces. The tailings (incomplete) produced 63 ounces, making a total of 316 ounces for the month.

VICTORIA GOLD MINING ASSOCIATION.—The following cablegram, dated 2nd inst., has been received at the London office:—"665 tons crushed, yielded 1190 ounces gold for three weeks. No dividend declared for the month of April."

VICTORY (Charters Towers).—The London office has received the following cablegram:—"Crushing (for fortnight) from No. 2 shaft 410 tons for 562 ounces of gold. Issue certificates against list No. 15, making 79,243 shares on the London register to this date inclusive."

VAN RYN ESTATE AND GOLD.—Result of 26 days working 30 stamps, 1154 ounces, 2566 tons.

VICTORIA AND QUEEN GOLD.—The London office has received the following cablegram:—"Call has been made of 1s. per share, payable April 19."

WOLHUTER.—Crushing for March, 1870 ounces from 3665 tons, 760 ounces from tailings.

MESSRS. J. AND T. POOL'S GIFT TO THE CAMBORNE MINING SCHOOL.—In December last we alluded to Messrs. Pool's gift to the Mining School at Camborne, of a case of specimens of perforated metal plates and wirework of their manufacture; to complete their gift they have now contributed a good assortment of forty model sieves. These sieves are about 4 inches in diameter, and 1½ inch deep, and are to be found in the drawers which are fitted in the case beneath the display of the specimens; the whole is placed in the Museum connected with the Mining School, making a valuable addition to the useful and instructive collection there gathered together. One half have metal plates in the bottom; these are shown from No. 12 needle gradually enlarging to 5 millimetres in diameter, all being of conical holes, and in copper; and there is one of 6 millimetres hole in perforated zinc. The remaining half have wirework in the bottom; these are shown from 60 to 2 mesh per lineal inch, in brass, iron, and steel. All are plainly marked the diameter of hole, or mesh; they are of free access to those using the Mining School, and will prove beneficial, in experimental purposes, to teachers and students alike for whose use and guidance they were made. As regards the two classes of these goods, of course plates are much stronger than wirework, and will consequently stand a greater amount of wear and tear, and thus last a longer period of time; and in addition to this the conical hole plates possess another advantage, they do not choke; and they give a very quick and free discharge. Wirework, however, has a greater area of discharge than plates, but it is more fragile, although for mining purposes in districts where the quartz or stone, &c., is soft, it is frequently used.

E COAL INDUSTRY.—A meeting of the Joint Sliding Scale Committee of the Monmouthshire and South Wales Collieries Association was held on Saturday at Cardiff, under the presidency of Sir William Thomas Lewis. Acting on the auditors' report, the committee declared that the colliers' wages, commencing to-day, will be advanced 3¾ per cent., making altogether an advance of 30 per cent. above the standard of 1879. The result has given great satisfaction to the colliers, who did not anticipate that the advance would be more than 2½ per cent.

MINING NOTES.

HOME, COLONIAL, AND FOREIGN.

MR. A. BRISTOWE, secretary of the New Milo Gold Mining Company, Wadnaminga, who has been to visit the mine returned, bringing with him three beautiful ingots of gold, weighing in all 227½ ounces, says the *Adelaide Observer*. The gold was obtained from 406 tons of tailings, which have recently been treated at the cyanide works on the Virginia Mine. The quantity referred to constitutes the first parcel of tailings treated from the New Milo, and the results are most encouraging. All the material had been previously treated by the battery belonging to the company, which, owing to the refractory nature of the ore, proved in the first instance to be a failure in the matter of gold saving. Crushings did not pay, and for a time the mine was shut down. Upon the introduction of the MacArthur-Forrest process the New Milo and the Virginia Companies combined for the erection of a cyanide plant, and the venture has been attended with success to both; so much so that the New Milo directorate will either duplicate the plant on the sister mine or will make other arrangements for extended operations by the same process. Beyond the ingots mentioned there is a cake of gold weighing 27½ ounces, which was taken from the battery after crushing 150 tons of ore, the tailings from which have not yet been treated, but they assay over 13 dwts. The New Milo is only one of many mines in the north-east to which the cyanide process is profitably adaptable. The ore had previously been through the battery, and the free gold amalgamated. The crushings have varied from 4 dwts. to 9½ dwts., the average being over 7 dwts. The result of the cyanide process is equal to over 11 dwts. per ton, the average total yield being, therefore, from 15 dwts. to 20 dwts. per ton. Since crushing operations were begun at the mine, 283 ounces of gold have been obtained by amalgamation. This, together with 227½ ounces from the cyanide vats, gives a total product of 510½ ounces to the credit of the mine, to which may be added some 1000 ounces of gold sold to the Wallaroo Smelting Works previous to the erection of machinery on the mine.

WE learn from the *Adelaide Observer* that the Commissioner of Crown Lands has received from the Government Inspector of Mines (Mr. J. V. Parkes) a report on the Golden Slope G.M. Syndicate's property, suited on Section 1286, and near the old Mount Pleasant diggings. The property consists of eight registered reef claims, which have a length of 800 feet along the supposed line of lode by a width of 600 feet. The syndicate is now applying for a lease of 10 acres. A shaft has been sunk to a depth of 22 feet on an irregular formation, composed of soft micaceous schist intermixed with veins and bunches of silicious ironstone. The formation strikes north 10 degrees east, with a dip to the east at an angle of about 45 degrees. The enclosing strata are composed of micaceous schist. Mr. Parkes took samples from different parts of the shaft, and on assay they yielded at the rate of 2 dwts. of gold per ton of ore. There is at present on the surface about 17 tons of stone, which the owners expect to give an ounce to the ton, and which they intend to send to the Government works for treatment. Samples taken from the heap and washed in the dish gave splendid prospects, and in a measure verified the statement made that it would yield an ounce to the ton. There is no doubt but that the formation is patchy, as the samples taken clearly showed, but it is certain that some of these patches are very rich. On account of the peculiar and irregular formation the Inspector cannot say definitely whether it is a lode or not. He advises the owners to continue sinking their present shaft to water level, which will probably be found at about 50 feet, then to drive north and south. He is of opinion that the claims are well worth prospecting.

THE *Johannesburg Star* says: On Saturday evening there was an enthusiastic gathering on the property of the New Chimes Company, the occasion being a presentation to Mr. J. M. Hodge on his resigning his appointment as mining captain. Mr. Burness occupied the chair, and in a few laudatory remarks, testifying to the respect and esteem in which Mr. Hodge was held by the employees, called upon Mr. John Martin to make the presentation, which took the form of a handsome gold watch and chain, supplied by Messrs. H. Marks & Co. The watch bears the following inscription: "Presented to J. M. Hodge, Esq., by the employees of the New Chimes Gold Mining Company (Limited). February, 1894." In a brief speech, Mr. Hodge returned thanks for the handsome present, which he said he would always regard as one of the best testimonials he had ever received. The remainder of the evening was spent in a convivial manner. The recipient of these favours comes from an old Cornish family of mining captains. He is the second son of Captain A. Hodge, manager of the New Virginia Gold Mining Syndicate, South Africa, and grandson of Captain Joseph Hodge, of Plymouth.

THE suspension of smelting operations at Block 14 Mine, Broken Hill, involves the almost entire cessation of work underground. All stoping has been stopped, as there is at present no avenue for the disposal of the sulphide, and one object of closing down the smelters was to husband the supplies of carbonate. Hitherto about 120 men have been employed underground, and of these 40 have been retained for mullocking, timbering, &c., and generally making the mine secure. The remainder, about 80, have been discharged. The number of surface hands and men employed directly about the furnaces amounts to 67. Thus the total number affected up to the present is about 150. The sulphide plant cannot be completed for several months to come. The foundations have just been finished. The arrival of the machinery and timber has been delayed, but a commencement will, however, be made with the erection of the machinery next week. The company is understood to be in a fairly good financial position. Despite the extensive reductions, the expenditure will still be considerable, while the company will have no source of revenue until the sulphide plant is in successful operation.

THE Pflaumberg and Wegener's Reef started work the second week in February, says the *Adelaide Observer*. The former is being worked under Captain Ellis. Work was commenced in an old shaft about 80 feet deep, and after sinking 5 or 6 feet a dead horse and two dead dogs were found. Expectations ran high in connection with Pflaumberg, and already between 20 and 30 claims have been pegged out adjoining. The divining-rod was used on the field, and resulted in Maddigan striking the reef about 2 feet from the surface. The reef runs north and south, and it seems, from the finds made, to carry gold right through.

MR. W. THOMAS, the manager of the Golden Stope Mine, near Mount Pleasant, reports, says the *Adelaide Observer*, the shaft sunk to 23 feet, and gold showing freely in the reef. He broke out two dishfuls of stuff from the north end, and roughly breaking up the lodestuff washed out 4 dwts. 10·7 grains of beautiful gold, in the presence of Mr. Scammell, of F. H. Faulding and Co. Besides this, there were several pieces of stone picked out which were showing gold. Mr. Thomas says this trial gave a return at the rate of 35 ounces to the ton, and the stuff seems all alike. He recommends getting out all the free gold at first by means of puddling and crad ing, and then passing the stone and tailings through the mill.

DEALING with the Island Lake Austin Mine at Murchison, the *Murchison Miner* of January 12 says:—The island, as its enterprising inhabitants somewhat grandiloquently term it, is one of many that dot the sandy surface of Lake Austin. Geologically it appears to have originally formed part of the bed of that ancient little sea which has been upheaved by some intrusive rock from below, and which protrudes its head from the regions of Pluto here and there. Commercially and economically the place should be renamed after the famous isle of Monte Christo, for, as will be seen from returns already published in the *Murchison Miner*, it has proved itself a veritable El Dorado. Geographically it is but 2½ miles long by about 1 mile wide, yet since the time when the now famous Bayley made his first rise there, it has yielded prodigious quantities of gold, with the application of little labour and less capital, and, no doubt, as these are properly introduced, it will fully maintain the high reputation it has already gained as a gold-bearing centre.

IN a telegram from Buluwayo, dated March 31st, Dr. Jameson, the administrator of the British South Africa Company, states:—"Gold prospects are very encouraging, and exceed expectations everywhere. The pannings brought to Buluwayo are marvellous. Prospectors are emphatic as to the permanency and size of the reefs. Good progress is made in the workings."

THE Woodbush Gold Mine is now being vigorously worked, says the *Zoutspansberg Review*, and there is a large quantity of ore ready for stoping. The battery will start crushing by the middle of April.

INSTITUTE OF IRON AND STEEL WORKS' MANAGERS.—A meeting of the South Staffordshire Institute of Iron and Steel Works Managers was held on Saturday evening in the committee room, Dudley Mechanics' Institute. The chair was occupied by Mr. J. Roberts (President), there being a fair attendance of members. This being the closing meeting of the session, Messrs. Thomas Hughes and W. H. Faget were elected auditors in view of the annual meeting. A paper on "Oil and Petroleum Engines" was read by Mr. H. M. Waynforth, A.M. Inst. C.E., Demonstrator in Engineering, Mason College, Birmingham. Mr. Waynforth gave details as to the numerous qualities of Russian petroleum and Scotch shale oil. With the aid of the oxy-hydrogen lantern he described the various forms of oil and petroleum engines in present use, enumerating the Priestman, Rocket, Hornsby-Akroyd, Robey, Trusty, Capitaine, and Crossley engines. This species of motor he regarded as hardly yet out of its infancy, leaving much to be desired as compared with other prime movers. Their advantage, however, lay in the fact that whereas in the case of a steam engine a man was required to take charge of it, oil engines, like gas engines, required very little attention when once started.—A discussion followed.

GREAT BRITAIN'S INDUSTRIES.—The advances made in methods of production and in new inventions during the last few years are so great that the ordinary mind is almost incapable of grasping them from a written record. In order to assist such a person in comprehending this vast progress, the exhibition to be opened on May 5th, at Earl's Court, will show in actual operation machine work, for which a certain part of the main building will be set apart, and motive power provided for exhibitor, at a moderate charge, and handicrafts, in which skilled workmen will give practical proof of their work. Exhibits from foreign sources, of interest and merit, will also be received from the Executive Council, and for these, as well as the various classes of British exhibits, diplomas, medals, or certificates will be awarded. It is further proposed to hold conferences of the different trades, and to give lectures in connection therewith, for which purpose the service of the highest available authorities will be secured. An important section will be devoted to the industrial arts, in addition to a display of fine art exhibits. The gardens will be, if possible, improved, and the best military and other music provided. As last year, a large portion of the buildings will be laid out as a promenade and garden, so that these benefits may be enjoyed despite wet weather. Electric light is, as heretofore, installed throughout the buildings and grounds. In addition to the customary attractions a gigantic wheel, of the highly successful Ferris wheel type, is in course of erection. The managing director is Mr. H. P. Dodson, and Mr. Loveday, B.A., is secretary.

FORTHCOMING MEETINGS.

**** We shall be obliged if Secretaries or other Officials of Mining, Railway and other Companies' will be good enough to advise us as early as possible of the date, time and place of their forthcoming meetings—whether statutory, semi-annual, annual, general or extraordinary, confirmatory or adjourned—in order that particulars may be announced for the benefit of our subscribers and more particularly our country readers. Balance sheets, reports and other matter to be submitted at such meetings should, where possible, accompany the intimations of the meetings sent.*

Name of Company.	Date.	Nature of Meeting.	Place.	Time.
Don Pedro G. M. Company	April 9	General	Winchester Ho	2 p.m.
Day Dawn P.C. Gold M. Co.	April 10	General	Winchester Ho	2 p.m.
Joe's Luck and Bon Accord..	April 13	General	Cannon-street	12 noon
Great Laxey M'ng Company	April 11	General	Cannon street	12 noon
Ooregum Gold Mining Coy.	April 11	General	Cannon-street	12 noon
Sutherland Reef	April 11	General	Winchester Ho	12 noon
Balkis Land.....	April 11	General	Winchester Ho	2 p.m.
Landack Diamond Fields ...	April 13	General	Winchester Ho	12 noon

THE GOLD FIELDS OF MYSORE (LIMITED).

HOLDERS of SCRIP CERTIFICATES to Bearers for Shares in the Champion Gold Mining Company of India (Limited), issued 18th July, 1892, are requested to present their Scrip at this Office on or after the 12th instant, in order that the dividend of 2s. per Share due that day may be paid thereon.

JOHN GARLAND, Secretary.

6 and 7, Queen-street-place,
London, E.C., 6th April, 1894.

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Editorial and Advertisement Offices:
18, FINCH LANE, LONDON, E.C.

Telegraphic and Cablegraphic Address: "TUTWORK, LONDON."
Codes used: "A.B.C.," Moreing's, and "Universal."

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LONDON: APRIL 7, 1894.

THE OOREGUM REPORT.

IN contrast with the other companies operating on the Colar field the Ooregum Gold Mining Company stands out conspicuous. A week or two ago we had before us the annual statements of the directors of the Mysore and Nundydroog Companies, and noted that though there was nothing depressing about them—especially in the case of the former—there was nothing to call forth enthusiasm. It is well known that within recent years the Mysore Company occupied the premier position amongst Indian mines. It is now relegated to the second position, the Ooregum Company having made such progress of late as to be at the present time easily first. The directors of this successful undertaking have this week issued their annual report, and very exhilarating reading it is. It is a tale of energetic working and magnificent results. No obstacles seem to have forced themselves into existence to stay steady and persistent progress, as was the unfortunate case with the Mysore and Nundydroog Companies. During the year 37,821 tons of quartz were stamped, from which 64,302 ounces of gold were extracted. In addition to this, 39,402 tons of tailings were treated, yielding 10,790 ounces of gold. The total quantity of gold produced was thus 75,092 ounces, which realised £280,040 10s. 3d. These results, compared with those of the previous year, show an increase of 13,780 tons of quartz stamped, and 22,703 tons of tailings treated, yielding respectively 15,111 and 6145 ounces of gold. It will thus be seen that the total increase is 21,256 ounces, the value of which is £77,790 15s. 7d. Surely, no more evidence is required to prove the value of this mine! And yet, in spite of this, the public, for some unaccountable reason, regard these Indian properties with feelings of suspicion and doubt. It is true that the publication of this report has given rise to more activity in the share market, but, in our opinion, it is not in proportion to the movement it merits. Altogether, the amount received for gold sold, after deducting royalty, was £266,184 19s. 2d. Receipts from other sources bring the total income up to £266,843 6s. 4d. The total costs charged against revenue amounted to £114,080 18s. 9d., including the sum of £21,116 0s. 9d. for machinery and goods shipped from England, a large proportion of which was in connection with new works, so that the result of the year's working has been a profit of £156,436 19s. 1d., or £40,695 10s. 6d. in excess of that made during the preceding year. In April of last year a dividend of 3s. per share was paid on both the ordinary and preferred shares, being the balance dividend for the year 1892. Since that date two dividends have been paid on account of the profits for 1893—one on August 10th, of 3s. per share on the ordinary and 5s. on the preferred, and the other on December 11th, of 3s. 6d. on both ordinary and preferred. The profit and loss account shows that after payment of these dividends, together with the income-tax on profits amounting to £2080 14s. 5d., and writing off £3500 for depreciation of machinery, buildings, and plant, there remains a balance of £53,625 1s. 3d. for distribution. This sum will admit of a dividend of 4s. per share, and consequently at the meeting to be held at the Cannon-street Hotel, next Wednesday, the directors will recommend the payment of such dividend on the 25th inst. This dividend will absorb £53,000, leaving a balance of £625 1s. 3d. to be carried forward. The dividends thus paid out of the profits for 1893 will amount to 10s. 6d. per share, or 52½ per cent. on the ordinary shares, and 12s. 6d., or 62½ per cent. on the preference shares, which is an increase on those paid for the previous year of 3s. per share, or 15 per cent.

Respecting the work done during the past year, and discoveries made, the directors, as usual, give detailed information. With their own statement are published in full the reports of the superintendent, the mine agent, and Mr. HAMBLEY, together with a large plan of the property to elucidate the points referred to. From the point of view of work done, and progress made, no exception can be taken to these reports, nor any adverse criticism offered. The directors themselves describe these documents as of a highly satisfactory character, and we cannot do other than endorse their opinion. A large amount of development work has been carried out on the property, adding materially to its ascertained value. To attempt to summarise within reasonable space the work accomplished would take up too great a portion of our space. Readers and shareholders must either wade through the wealth of matter themselves, or wait until it is summarised for them at the meeting in a more interesting manner by Mr. JOHN TAYLOR. We might here, however, allude to the discovery of great importance recently in the explorations carried on in the 215 feet level north of Wallroth's shaft. In driving this level extensive ancient workings were met with. On the removal of the debris it was found that a part of the lode left standing was in places very rich. It was further discovered that the lode, instead of pursuing its normal course north, doubled back in a south-easterly direction. The lode, which averaged 1 foot 3 inches wide had, at the date of the annual report, been driven upon in its direction for about 22 feet, and was of the extraordinary assay value of close upon 16 ounces of gold to the ton. This fact needs no comment. Its importance is apparent, without the need of attention being drawn to it. Another insignificant fact, which cannot be overestimated, is that notwithstanding the greatly increased output during the year, the reserves of quartz at present standing throughout the mine show an increase over last year's estimate of 15,171 tons, or an estimated total reserve of 70,525 tons. To keep pace with the increasing scale of operations the directors have provided a large amount of new machinery, the principal items being a 20 head stamp mill, with engine power for 40 stamps; an engine and plant for treating larger quantities of tailings; and an air compressor for driving additional rock drills, which will greatly add to the power for developing the mine and increasing the output. The new tailings machinery is designed for treating an additional quantity of about 1600 tons a month, and will, it is anticipated, be started by the end of the present month. As the estimated cost of treating the tailings is only about 6s. 2d. per ton, the directors consider that a substantial addition to profits should be derived from this source. The quantity of tailings now accumulated and waiting treatment is 42,419 tons. It is hoped that the new 20 head mill will be at work by the end of April. It should be capable of stamping an additional 1000 tons of quartz a month. The company will derive considerable advantage during the current year from the working of the new railway from Colar-road station to the mines, which is expected to be available for general traffic this month. More expeditious transport will result, and considerable saving will, of course, be effected in time and money. The directors look forward to the coming year with considerable hope, and foresee a continuance of the company's prosperity in a greater degree than in the past.

THE ROBINSON COMPANY.

WHEN we turn our eyes to the Witwatersrandt gold field we gaze upon the richest and most promising region in the world; and when we direct attention to the Robinson Gold Mining Company, it is to the largest and most productive property in that district. If we estimate it according to its market value, it is at the present moment a long way from the first, because other companies which pay large dividends have special advantages. The Robinson Company is burdened with an enormous capital, and consequently, though the profits earned are far greater than those of any other company, the dividends have to be divided amongst a greater number of shareholders, and are proportionately less. The authorised capital is no less than £2,750,000, in 550,000 shares of £5, so that it will be seen at a glance what an enormous profit must be earned to pay even a 4 per cent. dividend. In addition to this heavy capital, there are 6 per cent. debentures, amounting to £100,000, which sum was raised last year to provide the purchase money for the ex-Robinson Deep Level Claims. This has been a wise expenditure. The property has turned out well, and is full of promise. Besides, considering its value, the Robinson Company acquired it on exceedingly cheap terms, so that there is here every cause for congratulation. Unlike many other mines in the neighbourhood, the ore is exceptionally rich, though a considerable portion of the returns is derived from concentrates purchased from other companies. The company is not an old one. It was formed in the year 1887. Since then the returns have steadily increased year by year. In 1888 the total number of ounces produced was 26,287; in 1889, 75,040; in 1890, 71,823; in 1891, 94,059; and in 1892, 144,790, so that little additional evidence is needed to show its increasing wealth and to form a forecast of its probable future.

The annual meeting of the company was held last month at Johannesburg, particulars of which have reached us by this week's mail. Some important information bearing on the future of the company was given by the Chairman, Mr. LIONEL PHILLIPS, which leaves no ground for doubt that there is a brilliant period of prosperity awaiting it. Commenting, first of all, on the financial position—which by the investor is more understandable and interesting—we learn that the profit earned amounted to the substantial sum of £333,717. This was the actual sum earned, but from it has to be deducted £30,921 for depreciation and redemption, and £1425 for general expenses, which places the disposable profit at the sum of £301,370. If to this be added the balance of £188,474 brought forward from the last account, the total available balance becomes £489,845, out of which two dividends of 4 per cent. were paid, absorbing £217,500, leaving £272,344 to be carried forward. Last year the number of tons crushed was not so great as in the year previous, the figures being 94,842 against 101,061, the decrease being attributable to the ore manipulated having been almost pyritic. The general manager estimates the reserves in sight as 231,367 tons, or more than two years' supply, even with 20 additional stamps. One very noteworthy and encouraging feature in his report is the statement that three levels a year can be developed, and only one exhausted, which quite justifies the board in increasing, as they are doing, the company's crushing power. During the year, too, the opportunity has been taken of improving and augmenting the hauling and pumping machinery, which, of course, will have an appreciable effect upon future results. The return per ton of ore has increased during the 12 months by 1 dwt. 8 grains, and as the cost of work has been reduced slightly, we can appreciate the Chairman's sanguine forecast that the ensuing year will probably be more profitable than the past, although he does not trust himself to say in so many words that the profits will be greater. By June, he assures us, however, the directors should have a very large balance available for distribution if no unforeseen circumstance or calamity should occur, and in order to relieve shareholders of any doubt, he promises, on behalf of the board, that a dividend of 5 per cent. shall be declared in June. It is very unlikely that any serious obstacle, such as that to which he refers, will arise between now and then, and, therefore, shareholders may rest content they will receive the dividend promised.

If there should be any doubt in the minds of investors as to the value of the main reef, the evidence furnished by the Robinson Company should be sufficient to dissipate it. Mr. PHILLIPS occupied a considerable part of his address with the testimony in favour of its increasing and permanent value, which he demonstrated in a manner that might be regarded as conclusive. The directors have decided to erect an extra 10 stamps to test the main reef practically, whilst they at the same time assure us that the testing of it has been steadily proceeded with during the year, with satisfactory results. The result of this test the Chairman regards as a foregone conclusion, for at the 375 feet level 1295 feet have been driven upon, with an average result of 11 dwts. 17 grains to the ton. At the 450 feet level the main reef has been attacked at four different points, whilst over a lateral extent of 351 feet the results have been even more encouraging. During the past year 10,210 tons of main reef, derived from the development drives on the fifth level, were crushed, and, in spite of that fact, the average for the year has risen. The Chairman does not bring this forward as proof positive of the value of the main reef, but argues that, seeing that the tonnage represents one-ninth of the total amount milled, and that there is no reason to believe that the south reef and main reef leader has been to any considerable extent richer in 1893 than in 1892, "it is strong presumptive testimony in favour of the correctness of the samples taken from the main reef." No one will feel disposed to quarrel, at any rate, with Mr. PHILLIPS' opinion that the main reef is destined to play a very important part on the Randt gold fields. Too much emphasis cannot be laid upon the result, both to the Robinson Company and to the whole of the gold fields, if this main reef should be successfully worked.

GOLD APPRECIATION.

THERE is one aspect of bi-metallism which has only now begun to receive due attention—and that is the degree in which gold has been artificially appreciated by legislation. Mono-metallists are never tired of urging that the present low price of silver—lower, perhaps, than it has ever been since SOLOMON made it "of no account" in Jerusalem—is due to the operation of the law of supply and demand. It would be much more correct to say that the present high price of gold is due to legislative interference with that law. For it is now coming to be generally admitted that the recent violent disturbance of the relative values of gold and silver is much more due to the appreciation of gold than to the depreciation of silver. If we strike an average of (say) 20 of the world's principal commodities we shall find that an ounce of silver will buy just as much (and no more) of them as it would a quarter of a century ago. It is the purchasing power of gold which has increased by about one-third within the last 20 years, to the direct injury of the producers in all countries where a gold standard exists, and to the direct advantage of the money-lending classes in those countries, as also to the producers of commodities in silver standard countries like China, Japan, and some of the Straits settlements, which have little or no indebtedness the interest on which has to be paid in gold. One thing only prevents this notable appreciation of gold from being at once and universally recognised, and that is that its value is always stated in terms of gold. If, for instance, it has been for years a little above £4 per ounce it is always understood that those are pounds sterling. We will give an illustration of the operation of this gold appreciation upon one of our home industries—the production of tin. The price of tin is now so low that scarcely five mines in the country are able to pay their way. Now, it so happens that the greater part of the world's supply of tin is produced in the Straits region, in silver-using countries having little gold indebtedness. With them a silver dollar will command practically as much food and labour, and, therefore, will produce as much tin as it would when a sovereign would scarcely purchase five of them. Now, the same sovereign will purchase about ten and a half of the same silver dollars, and, therefore, more than twice as much tin as it otherwise would. Had the ratio between gold remained as they were a quarter of a century ago, the Straits region, instead of being able to sell tin in Europe at something under £70 per ton, would now have to charge nearly £150. It would be just the same to them; our tin miners would be better off and the public might, perhaps, have to pay a fraction of a penny more for each dozen tins of salmon or of corned beef. We commend to those of our readers who wish to get further light on this subject, complicated in itself, and wilfully complicated as it has been by interested "gold-bugs," the careful consideration of two papers on the Indian currency problem, recently read before the Society of Arts, and also the most instructive discussions thereon, reports of which will be found in the valuable Journal of that Society.

NOTES AND COMMENTS.

THE Don Pedro Company has again struggled with a year of adversity. We are afraid the shareholders in this concern are about giving up all hope of receiving a dividend for some time to come. Last July they were encouraged by a half promise that in the current year profits would be reaped to enable a fair and encouraging distribution to be made. Far from the fulfilment of this, an appeal is now being made to them "to subscribe a further sum of about £10,000 in debentures of £25 each, at 10 per cent. discount, and bearing interest at 10 per cent., payable half-yearly." This, we are told, is necessary to develop encouraging points in the mine, and to place the company in a sounder financial position. From what we learn it is likely that the shareholders will respond to this "urgent appeal." The difficulties with which the directors have had to contend during the past year have been real and formidable. The internal condition of Brazil has not tended to the peaceful and uninterrupted operations of any industry located in that country. As the directors point out, the revolution there has not allowed the Don Pedro Company to conduct its business in security and with success. But as this is nearing an end, the company will, during the coming year, be relieved of so weighty a burden, and in taking a forecast of the future, this fact should be taken fully into account. Another regrettable circumstance which has tended to bring about the disappointing results of the past twelve months—which can likewise be remedied; indeed, steps towards this end have already been taken—has been the alleged unsatisfactory management of the company. The directors naturally desire to say but little on this subject; they simply say that they have found it necessary to make changes in the management, "which, doubtless, will lead to an improvement."

ANOTHER reason why they think it necessary to do this is that for some time past they have had strong grounds for suspecting information to have reached certain speculators in advance of official reports, market operations having been "traceable to such surreptitious intelligence." If there are substantial grounds for this suspicion, and if such reprehensible conduct is provable, then we heartily extend our sympathy. Such conduct should be put down with a strong hand, for it is not only sufficient to do great injury to a company, but being done secretly it causes innocent persons to be regarded with suspicion, and to be held accountable for transactions of which they have no knowledge whatever. Clearly, the shareholders of this company cannot afford to decide hastily or without the exercise of much reasoning and thought.

NOTHING out of the ordinary course of things occurrred at Thursday's meeting of the Durban-Roodepoort Gold Mining Company. The report and the statement from the chair revealed a highly satisfactory state of affairs, but that was to be expected, and only the converse would have created a surprise. It is evident that the board are actuated by a high ambition. Dividends amounting to 55 per cent. were paid during the year; but a distribution of that kind does not appear to satisfy a Durban-Roodepoort Gold director. Consequently, a new plant is to be erected at a cost of £34,000, chargeable to the revenue of two years, to improve and quicken the process of reduction. What will be the "largely increased results" which the board "confidently expect" to accrue from these additions to the established plant is left to conjecture, but they must be something big. It is surprising to reflect that January, 1888, was the month in which the company was formed. During the six years of its existence the concern has paid nearly 200 per cent.—a most extraordinary record. The Chairman, at Thursday's meeting, dwelt with justifiable complacency upon the predictions he had made at the last annual meeting, and showed how they had been surpassed, bold as they certainly were. The large sums which the board have insisted upon writing off for depreciation show that they have not allowed the extraordinary success of their management to decrease that caution which is the best guarantee for the future. Like board, like manager; the same far-seeing policy appears to have been pursued in the colony, for in December of last year the quantity of payable ore developed and ready for stoping was estimated at 105,208 tons. From an exhaustive and careful examination of the elaborate statistics tabulated in the report, it is difficult to escape the conviction that the phrase with which the general manager, Mr. H. R. Skinner, concludes his report, "the outlook for the coming year is most encouraging," can be accepted without any qualification in its application to the whole of the operations of the company.

THE policy announced by Mr. R. C. Power at the statutory meeting of the Idaho Exploring Company, held on Monday, may be termed a policy of masterly inactivity. "Broadly speaking," remarked the Chairman, "our object is to make money," and the statement harmonises fully with the later description of the function of the company, as a "receptive function." Lookers-on proverbially see most of the game, and there is a strong possibility that, if the directors continue to scrutinise narrowly, and with caution, the various opportunities time must bring to them, one, at least, will appear favourable to the interests of the company. Some interest has been taken on behalf of the company in a syndicate formed to obtain the option of acquiring the concessions held by the Hampton Lands Company, and the favourable opinion the public have lately formed of the properties in this part of Western Australia will naturally tend to increase the prospective value of the company's holding. Along with this must be reckoned the revival which is fast taking place in the commercial outlook. Able management will be certain to turn this improvement to account. Meanwhile the expenses of the company's administration are being cut down almost to vanishing point. Directors' and secretary's fees, with office expenses, work out at £160 a year. They could hardly be lower. Economy of this sort, combined with able management, should ensure for the company a bright future.

WE learn this week from a South African contemporary that the works at the Randt Central Ore Reduction Company's property present an appearance of great activity, and that enlargements are constantly required, in view of the increasing business done by the company in each department of its operations. In the chlorination department only one furnace has as yet been erected, but in view of the fact that a large surplus of concentrates is continually accumulating, as a result of the present plant being of insufficient capacity to keep pace with the quantity purchased, arrangements are to be made for the construction of others. An important branch of the company's business consists in the manufacture of plants and metallurgical appliances, in which a lucrative business is carried on. Extensive wood and iron machine shops have been fitted up, as also a foundry, at which some excellent work is being executed.

AT the tenth half-yearly meeting of the Meyer and Charlton Gold Mining Company, the Chairman did not have so encouraging a statement to make as might have been expected and hoped for. He assumed that during the next six months the directors will take into consideration the financial position of the company, when it might be found necessary to call the shareholders together for an increase of capital. He took care to add, however, that the increase would be small. Shareholders, of course, though they will feel it somewhat, need not look upon this as discouraging. Indeed, they are quite aware that the money will be spent to good purpose, and in a manner from which they may expect to be early recouped. The capital of the company is but small. It is only £75,000. Last year dividends to the amount of 60 per cent. were distributed. The statements made at the meeting show that the ground about to be stoped is far richer than that from which the recent returns have been derived, whilst an additional cyanide plant, about to be erected, is expected to largely increase the yield. During the past half-year the directors have succeeded in considerably reducing the working costs, and promise to make even further reductions during the coming year. They anticipate that the cost this year should not exceed 25s. per ton; it used to be over 30s. It is their desire, however, to see it brought as low as 20s. or 18s.

THE directors of the May Deep Level Gold Mining Company also see their way to a material reduction in the cost of working during the current year, and likewise to many openings for an increase of yield. This, on the face of it, is very encouraging. We have listened to so many statements of a similar kind, however, that on this we are ed to put the usual discount,

No doubt, the board will be able to do something in this direction; it is possible that a little of what they anticipate will be realised; it is greatly to be desired, at any rate, that nothing will happen to incur grievous disappointment. Their report, presented at the ninth half-yearly meeting of the company, held in South Africa, is not of a rosy character, During the past six months great difficulties had to be encountered owing to the continual scarcity of native labour. Then, again, the ore going to the battery could not be properly sorted, and a large percentage of poor and unpayable rock was mined and put through the mill. It is to this cause the directors attribute the falling off in the returns.

THE gold mining industry in Nova Scotia appears to be on the decline, whilst its coal and iron wealth is increasing. Mr. Gilpin, in his report for 1893, speaks rather discouragingly of the future of gold mining in this province. Comparing the output of 14,030 ounces for the first nine months of last year with 21,080 ounces for the whole year of 1892, he says:—"This would indicate another falling off in the gold yield. The business offers little of interest to be reported on during the past year." His deputy inspector, Mr. Maddin, on the other hand, does not take so depressing a view, for he says, while regretting that "in this county gold mining is not so actively prosecuted as hitherto . . . there are tangible signs of improvement in the industry. Thirty years ago the activity of gold mining in the Province appears to have been not only greater, but the results more encouraging than at any time since. In 1862, when less than a fourth of the stuff was crushed, and when labour was much cheaper, 1 ounce 2 dwts. 11 grains of gold was obtained from a ton of stuff. In 1863 and 1864, when the largest force of men was employed, 14,001 ounces and 22,022 ounces respectively were extracted, at the rate of 18 dwts. 16 grains per ton. And in 1865, during which year 24,433 tons were crushed, a result of 1 ounce 0 dwts. 20 grains to the ton was obtained, a rate of yield which has never since been reached, In the last 10 years, too, the cost of labour has been at its highest, for the earnings of the hands employed has reached an average of $2·50 cents per working day as against $1·69 cents in the 10 years, 1862 to 1871,

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ACCORDING to the Year-book of Australia for 1893, now being published, the total value of all minerals raised in the six colonies (Victoria, New South Wales, Queensland, South Australia, Tasmania, and Western Australia) up to the end of 1892, was £401,313,540. Of this amount £11,437,355 in value was raised in 1892, and, in comparison with 1891, shows an increase of £1,337,878 as the result. The total value of all minerals raised in the colonies up to the end of 1892 was as follows:—

New South Wales	£ 98,842,778
Queensland	38,293,646
South Australia	20,876,064
Tasmania	9,122,819
Victoria	233,657,435
Western Australia	520,798
Total	£401,313,540

In total mineral production Victoria still far outstrips all the other colonies, the value being, at the end of 1892, nearly three-fifths the total amount of all Australia. In annual mineral production New South Wales, for 1892, shows the largest yield, totalling in value more than half the whole production of Australia for that year, as will be seen from the following values of minerals raised during 1891 and 1892:—

	1891.		1892.
New South Wales..	£6,655,010	....	£5,305,815
Queensland	2,309,560	....	2,470,471
South Australia	267,797	....	204,418
Tasmania	1,087,542	....	585,277
Victoria	2,340,052	....	2,645,090
Western Australia..	115,182	....	226,284
	£12,775,143		£11,437,355

FROM the above it will also be seen that there is a decrease of nearly £1,000,000 in the value of the mineral production of the whole of the colonies in 1892 over 1891. To New South Wales principally is due this decrease, although Tasmania and South Australia contribute to some extent towards it. Victoria shows the greatest increase, being £300,000 above last year, Queensland coming next with an increase of £160,000, and Western Australia next with £110,000. The following will show the Increases and decreases in the value of minerals raised in the colonies during 1892 when compared with 1891:—

	Increases on 1891.		Decreases on 1891.
Victoria	£305,038	....	—
Queensland	160,911	....	—
Western Australia	111,112	....	—
New South Wales	—	....	£1,349,195
Tasmania	—	....	502,265
South Australia ..	—	....	63,378
Total	£577,061	....	£1,337,878

This is a decrease in the value of the total mineral production of 1892 above 1891, for all the colonies, of £760,817. The detailed returns of mineral production for 1893 are not to hand at date of going to press, but it is very satisfactory to find from the approximate returns, published in advance, that gold production has received a great impetus during the year, and the mint issues show a large increase over the previous year. This increase is likely to be maintained during 1894.

WE have received some very cheering news this week from Matabeleland. It has already given rise to much satisfaction and comment, and has been the cause of an active enquiry for Chartered shares. The information is contained in a telegram from Dr. Jameson, the administrator of the British South Africa Company, and is to the effect that gold prospects are encouraging, and exceed expectations everywhere. The pannings brought to Buluwayo—the place, by the way, from which the news was despatched—are "marvellous." Prospectors are emphatic as to the permanency and size of the reefs. Good progress is made in the workings. If this is not exaggerated, the British South Africa Company are to be congratulated. We have no need to envy them this success. As we have repeatedly said, should Matabeleland turn out to be a rich and permanent country, it will give an impetus to the mining industry which it sadly needs. Many eyes have been directed towards this region with hope and longing, and this encouraging intelligence will give rise to no little rejoicing on their part.

LORD SHAND'S utterances before Tuesday's meeting of the Miners' Board of Conciliation could hardly have been characterised by greater judgment, or have been set in a tone more likely to help the board to the attainment of its purpose. Candour and openness are a necessity in such delicate matters. Without them the chasm yawning between the two parties to the negotiation may even be widened. Should the idea arise upon one side that the other are not actuated by a desire for peace and fair play, the board might as well be dissolved. Proceeding in a spirit of liberal concession, such as the Chairman advocated, the dispute may be given a welcome finality. The Chairman was well advised in pointing out the enormous importance attaching to the office of the board. It is one fraught with moment to the whole industrial world. With the uncertainty and distress of a period of acute labour disputes, harmful results must be occasioned to the whole commercial community, and indirectly to the whole body social, as was clearly shown a few months ago, and, with such important issues before them, the members should go to work with the utmost care and caution. The results of the experiment will undoubtedly affect the industrial future, at least of England, probably of Europe. That the miners—or, at least, a considerable number of them—have expressed dissatisfaction with Lord Shand's attitude on Tuesday, and account him unfitted for the post of arbitrator, seems likely to bring about another crisis in the coal trade. This turn of events has already set the world speculating on the probable outcome. The evil effects can only be averted by a timely display of wisdom and judgment on the part of those directly concerned.

DURING the last two or three weeks we have called attention to the progress of mining in British Guiana. In an article on this subject the *Mining Gazette*, of Georgetown, Demerara, after quoting that well known phrase "the darkest hour is that before the dawn," illustrates it by the career of mining in this region. The writer of this article laments the fact that the immense riches concealed in the interior of this colony have not been fully grasped by the local community. He also assures us that the prospects of placer mining are improving, and that new discoveries by prospectors are announced in the Mazaruni and Cuyuni districts. The article in question has a word of praise as to the promising condition at the present moment of the Kanimapoo mine. The prospects of the Barima Company, we are likewise told, are good, and very favourable accounts are given of the Warimbo and Manicuri development syndicates, of which ventures the *Gazette* is exceedingly hopeful.

AN ACCEPTABLE METHOD OF ADVERTISING.—We have received from Messrs. George Gregory & Co., of 3 and 4, Tokenhouse Buildings, a useful blotting-pad, bearing particulars of the stock and share business carried on by them, printed, however, in such a way as neither to impair the utility of the blotter nor to make it unsightly. A method of advertising so beneficial to both sender and recipient might be extended with advantage.

THE PATENT DAW ROCK DRILLS. — We have received from Messrs. A. and Z. Daw, the well-known mining engineers and mine managers, of 11, Queen Victoria-street, a handsomely got up catalogue of their rock drills, so well known in mining circles. The high pitch of perfection to which the firm have been able to bring their drills is, no doubt, due to their wide practical experience in mine working. Having had daily opportunities of subjecting their drills to the crucial test of usage in the hard rock of the mines under their management, they have been able by close observation to project successive improvements which have resulted in the drill as it is now presented in the catalogue. Especial attention has been given to the perfection of the mountings, so as to facilitate their adjustment in any required position. Various modifications of the drills have been made to meet different requirements, and altogether, the wide experience of the firm has been brought to bear in the endeavour to give them the highest utility. The catalogue will be an indispensable addition to the library of a mine manager.

SOCIETY OF ENGINEERS.—At a meeting of the Society of Engineers, held at the Town Hall, Westminster, on Monday evening, Mr. George A. Goodwin, President, in the chair, a paper was read by Mr. E. Lloyd, on "Gasholder Construction." The author, after remarking that the construction of gasholders is not carried out on strictly defined lines and in accordance with generally accepted formula, instanced some marked discrepancies in designs of holders. This led up to the question of the economies to be made in the construction of gasholders by making use of growing experience in large holders, The support required by the gas-containing vessel was obviously a very important item, and whilst expensive as designed usually at the present time, added in no way to the storage of the gasworks. The author then remarked on the probability that the general conception of the flimsy nature of a holder arose from the fact that in the early days of the gas industry it was necessary to suspend holders by chains passing over pulleys, heavy weights being hung on the other end of the chain to lessen the weight on the gas in the holder. He showed how, in the great majority of cases, the tanks being sunk in the ground pillars were of necessity erected to carry the chains and balance weights. Owing to these circumstances holders have always been suspended from the top; had they been suspended from the bottom they would have been found to be absolutely stable, and their ability to withstand wind pressure would have been early proved. Seeing that a modification of the means employed in supporting holders suggested the possibility of a large economy in construction, the author proceeded to deal with the strength of a holder under the conditions of working and as a structure. It was pointed out that inflation gave to the inner lift or lifts a great rigidity owing to the suspended weight of the outer lift. Also that each lift has a certain power to resist compression as is seen from their ability to stand when out of action in the tank, and that this strength is in reserve when the holder is suspended and inflated. And also that inflation so acted as to brace the whole structure together, and rendered the sheeting a powerful factor.

OUR CITY ARTICLE.

FRIDAY EVENING.

THE MINING MARKET.

Another busy week all round.—A firm tone for South Africans.—Chartered to the front.—Indians and Miscellaneous active.

AS we foreshadowed in our last issue, the past week has been active, an excellent trade being done throughout the whole of the market. This week, however, a disposition to make profits has caused a set back in many of the South African descriptions, and has brought about a less healthy tone, but, of course, this must by no means be taken seriously. There is every reason to look back upon the past week with pleasure, as it is an indication that the public are tired of doing nothing. In the South African department Chartered have been the feature throughout the week, though the tone has been somewhat fluctuating as if the public regarded the future of the company in fits and starts. We have received this week most encouraging news of the richness of Matabeland; of further and remarkable discoveries; and of encouraging pannings from various reefs. This, no doubt, has been the cause of greater attention being paid to Chartered and of the hopefulness with which, at present, the future is regarded. Owing to the dividend announcements both Wolhuter and Langlaagte have improved. Attention has also been directed to Crown Reef, Ferreira, Jubilee, Cities, and others. Later in the week Chimes showed considerable strength, on the satisfactory yield of 2543 ounces for March, against 2135 ounces for February. At the Simmer and Jack Mine 9000 tons were crushed during last month, yielding 3721 ounces of gold, and concentrates equal to 240 ounces. The March crushing from the City and Suburban yielded 4190 ounces, against 4005 for February. Diamond shares have not been so firm this week, a dull tone, on the whole, having been shown both by De Beers and Jagers. The miscellaneous department has displayed more spirit this week than for a long time past. Although at the early part of the week Indians were rather dull, they afterwards improved, and finally displayed considerable strength. The directors of the Ooregum Company have this week issued their annual report, which is in every way satisfactory and encouraging. The shares have consequently improved, though not to the extent the position of the mine warrants. We have received advices of a further excellent crushing at the Aladdin Mine. During the past fortnight 180 tons of ore were crushed, yielding 950 ounces. This, naturally, has brought about an improvement in the company's shares. Don Pedro, despite the appeal about to be made for more money, have been well-supported.

British Mines.

A very fair business has been done on the Cornish market during the past week, but chiefly in the low-priced shares. At the West Frances meeting, last Thursday, the accounts showed a loss of about £1000, and a call of 5s. per share was made. Captain Josiah Thomas gave a very good report of the property, and attached considerable importance to the recent improvement at South Frances. The shares of the last-named, after advancing to 2½, close easier at 1¾. A good business has been done in Killifreth, and the shares close about 3¾. Dolcoaths are firm at 78½, with but few shares offering. Carn Brea, East Pool, and West Kitty are quiet.—Risen: Dolcoath, 50s.; South Frances, 15s. (allowing for call); and West Frances, 17s. 6d.—Fallen: Carn Brea, 10s.; and West Kitty, 2s. 6d.

South African Shares.

The upward movement in this department of the market continued at the commencement of the week. The feature of the day was the demand for Chartered, consequent upon the encouraging news received from Mashonaland respecting rich discoveries there. Amongst gold shares Wolhuters were in conspicuous demand, the shares improving 7/8. Good business was also done in Langlaagte, the shares going up to 4¾. Ferriera improved 7/8, whilst advances took place in Salisbury, Wemmer, Worcester, and Princess. George and May improved 1s., Henry Nourse 3-32, Crown Reef ¼, Jubilee and Van Ryn 7/8. On the other hand, profit-taking caused slight declines in Primrose, Meyer and Charlton, Geldenhuis Deep, Villages, and one or two others. New Rietfontein fell ¼. Most active business was transacted in the land section of this market, rises taking place in Exploring, Sutherland Reefs, Oceanas, Zambesias, and a few others. Aladdins were comparatively quiet, Jagers going back 7/8, and De Beers remaining unchanged. Consequent upon the opportunity afforded for profit-taking, and which was readily seized, there was a reaction in the Kaffir market on Tuesday, but, of course, this set back was unimportant, nor did it cause any surprise. Chartered were again the feature of the day. The shares opened at 36s. 3d., advanced 3d., and reached to 35s. 6d. Amongst gold shares a rise of 7/8 took place in Stanhopes, improvements affecting Geldenhuis Main Reef and Van Ryn. On the other hand, a decline of ¼ took place in Simmers, Langlaagtes fell to 4⅝, Jumpers to 4¼, United Roodepoort to 2½, Meyer and Charlton to 5⅝, Chimes to 1⅝, and Cities to 13¾. Crowns and Jubilees, on the other hand, were firm. Amongst the land shares which reacted were Oceana, Exploring, and Zambesia. Amongst diamond shares, Jagers relapsed ⅜, but De Beers only gave way to the extent of 7/8. On Wednesday a firmer tone manifested itself in this department, Chartered, as usual, being extremely active. A few declines, however, took place in some of the gold shares, though not to any great extent. Amongst the latter, the feature of the day was again Simmer and Jack, the price going up 7/8. An enquiry also set in for South Simmers, the shares closing at 1¼ bid. An improvement of 7/8 also took place in Stanhopes, whilst Salisburys advanced to 2 1/16 buyers. Primrose likewise showed an improved tone, the shares advancing to 4 1/16 bid. On the other hand, Ferreiras recovered to 7½, and Chimes to 1 1/16. Amongst the shares which receded were Cities, Wemmers, Robinsons, Crown Reefs, Henry Nourse, Meyer and Charlton, Jumpers, Spes Bona, Geldenhuis, Nigel, Heriot, George and May, and Langlaagte. After re-opening firm, Chartered reacted to 34s. 9d., but later on in the day they rose 3d., finally closing at 35s. 9d. A strong tone characterised Consolidated Gold Fields, the shares improving 7/8. Oceana Developments and Bechuanaland were weaker. Amongst diamond shares, Jagers recovered ¼, but De Beers fell 7/8. Shebas relapsed 6d. On Thursday considerable firmness was displayed in the South African department, although here and there a few sales to secure profits brought about a somewhat quieter tone. The decline in prices was, however, of an unimportant character, whilst there were plenty of advances to make up for losses. Altogether the undercurrent was strong. The feature of Thursday was again Chartered, but after advancing to 36s. 1¼d., a weaker tone set in, the closing quotation being no higher than 35s. 3d. Amongst gold shares, Chimes improved 7/8, owing to the satisfactory yield for March of 2543 ounces. Ferrieras, Simmers, South Simmers, Meyer

and Charlton, Jumpers, Luipards Vlei, all improved. On the other hand, Rand mines showed a further reaction of ⅛. Amongst other land shares, Consolidated Gold Fields were firm, but Oceanas, Bechs., Explorations, and Explorings were weaker. Shebas went up to 24s. Diamond shares were much weaker, De Beers and Jagers falling 1/16. To-day the South African market has been very steady, the chief features being a demand for Tranvaal Gold Exploration and for Orange Free States, which went up to 5¼. —Risen: Africkander, 1s. 3d.; Alexander Estates, 1s.; Aurora West, 1s. 3d.; Bechuanaland, 1s. 6d.; Booysen, 1s. 6d.; Buffelsdoorn, 2s.; Champ D'or, 5s.; Chartered, 2s.; East Rand, 1s.; Exploration, 2s. 6d.; Exploring, 5s.; Ferreira, 10s.; Frank Johnson, 2s. 6d.; Geldenhuis Estates, 2s. 6d.; Geldenhuis Main Reef, 1s. 6d.; Gold Fields of Mashonaland, 1s. 3d.; Grahamstown, 1s.; Griqualand West, 2s 6d.; Johannesburg Estates, 2s.; Kleinfontein, 2s. 6d.; Langlaagte Royal, 6s. 3d.; Luipaards Vlei, 1s.; Moodies, 6d.; New Chimes, 2s. 6d.; Northern Transvaal Land, 1s.; Oceana Development, 2s. 6d.; Orange Free State, 30s.; Princess Estate, 2s.; Randfontein, 1s.; Sheba, 6d.; Simmer and Jack 17s. 6d.; South African Trust and Finance, 1s.; South African Exploration (allowing for dividend), 3s.; South Simmer and Jack, 6s. 3d.; Stanhope, 5s.; South Reef, 2s. 3d.; Transvaal Exploration, 2s. 6d.; Transvaal Land and Development, 1s.; Van Ryn, 2s. 6d; Wammer, 2s. 6d.; Wolhuter, 1s. 3d.; Zambesia, 1s.—Fallen: Balkis Land, 6d.; City and Suburban, 5s.; Consolidated Deep Levels, 3s. 9d; Consolidated Gold Fields, 1s 3d.; De Beers, 2s. 6d.; Geldenhuis Deep, 2s. 6d.; Glencairn, 2s. 6d.; Henry Nourse, 1s. 3d.; Joe's Luck, 6d.; Johannesburg Pioneer, 2s. 6d.; Johannesburg Trams, 1s.; Jubilee, 2s. 6d.; May's, 1s. 6d.; Meyer and Charlton, 2s. 6d.; New Jagersfontein, 7s. 6d.; New Primrose, 2s. 6d.; Nigel, 1s. 3d.; Rand Mining, 5s.; Rietfontein, 2s. 6d.; Roodepoort (Kleinfontein), 6d.; South African Gold Trust, 6d.; United Langlaagte, 2s. 6d.; United Roodepoort, 5s.; Village Main Reef, 5s.; Witwatersrand Knight's, 1s. Dividends declared: Jubilee, 30 per cent.; Langlaagte, 12½ per cent.; Wolhuter, 2s.

Indian and Miscellaneous Shares.

This market, like the South African department, exhibited renewed activity at the commencement of the week. Broken Hill Props. recovered ⅛, Don Pedro were a shade better at 5s., whilst Elkhorn, Poorman, West Argentine, and St. John del Rey showed improvements varying from 3d. to 6d. Amongst Indian shares Mysore Reefs fell 6d., and amongst copper shares Rio Tinto were 1/16 lower. The activity in this department continued throughout Tuesday. Indians, however, were nearly all down, and, despite the encouraging report of the Ooregum directors, the shares were flat. The feature in this department was St. John del Rey, which went up to 25s. on a statement in the report that the machinery and plant are arriving on the mine. Elkhorn rose 1s., Colombian Hydraulic recovered to 17s., and Gravel Gold to 7s. Don Pedro were also bid up to 5s. 6d., and Montana and Poorman were the turn harder. In consequence of the encouraging statement delivered at the meeting, Idaho hardened to 1s. 1½d. Dealings took place in Caratals, Lomas, Kapangas, and West Argentine. Amongst copper shares Rio Tinto recovered ⅛ and Cape Copper 1/16. The active tone in this department of the market continued throughout Wednesday. Indians showed a better tendency, Champion Reef going up 1/16, Mysore Reef 6d., and Ooregum, Ordinary and Preference, 1/16. Broken Hill Props were unchanged. Day Dawn Block and P.C. were dull. Tolima B advanced ¼. Aladdin recovered ⅛, and Don Pedro 6d., whilst large dealings took place in Idaho, Kapanga, and Poorman. St. John del Rey, on the other hand, relapsed 1/16. Thursday witnessed a continuance of the activity and animated buying in this department. Indian shares again showed a better tone, Mysore Reefs, Ooregums, Gold Fields, Champions, and Nundydroogs improving. Owing to the further fall in silver, Broken Hill Props. declined ⅛. Amongst other descriptions, Gravel Gold fell ⅛, and St. John del Rey 1/16. Aladdins maintained a firm tone. The principal feature of to-day in this department has been the fall in Mysore Gold shares to 2⅞. On the whole, the market remained pretty firm, a good deal of business being done in the low-priced shares—notably in Idaho and Argentines. —Risen: Aladdin's Lamp, 2s. 6d.; American Belle, 6d.; Broken Hill Proprietary, 1s. 3d.; Champion Reef, 3s. 9d.; Colombian Hydraulic, 1s.; Coromandel, 1s.; De Lamar, 6d.; Don Pedro, 1s.; Elkhorn, 9d. (allow dividend); Gravel Gold, 1s.; Idaho, 9d.; Mason, 2s. 6d.; New Guston, 1s.; Ooregum, 1s. 3d.; ditto preference, 2s. 6d.; Poorman, 1s. 6d.; Rio Tinto, 5s.; St. John del Rey, 3s.; Tolima A, 10s.; ditto B, 10s.; West Argentine, 9d. —Fallen: Achilles, 5s.; Burma Ruby, 1s. 6d.; Day Dawn P C., 1s. 3d.; El Callao, 3s. 9d.; Fortuna, 2s. 6d.; Mysore, 6s. 3d.; Nundydroog, 2s. 9d. (allow dividend); Wentworth Ordinary, 6d. —Dividends declared: Brilliant Block, 6d.; Colombian Hydraulic, 1s.; Cravens, 3d.; Mount Morgan, 6d.; New Queen, 6d.

WEST OF SCOTLAND MINERS.—A conference of the West of Scotland miners' agents and delegates was held in the Waterloo Rooms, Glasgow, on Saturday, Mr. Chisholm Robertson presiding. At a conference of delegates held in Glasgow on Monday, at which a Scottish Miners' Federation was formed, it was decided that all future conferences should be convened by the President and secretary of the federation, and the conference of West of Scotland delegates, held on Saturday, was held merely to arrange for the transference of the business it had had remitted to it from a previous conference to the federation.—The Chairman having explained the position of affairs, and stated the different matters which should be handed over to the federation, suggested that the conference should pass a resolution requesting the President and secretary of the federation to convene a national conference for Monday, 9th April, in the Waterloo Rooms, at 11 a.m. A motion embodying this was unanimously agreed to.—On the motion of Mr. Smillie, seconded by Mr. Muir, it was agreed to advise the West of Scotland miners to resume working five days a week, and to leave the decision as to policy to the Federation Conference, which will bind the miners of Fife, Clackmannan, Kinross, and the Lothians, all of whom have taken no part in the recent movements of the West of Scotland miners. The Rutherglen check-weighing test case was considered, and it was agreed to remit it to the Federation, Mr. Chisholm Robertson suggesting that it was a case which should be carried on by the Crown, and that a representation to that effect should be made at once to the Home Office. It was finally resolved that the following matters should be remitted to the Federation Conference on Monday next:—Wages, restriction, and the last case referred to above. Mr. Chisholm Robertson, who has acted as President of the miners' conferences for the past eight years, and who has been appointed secretary of the newly formed Federation, was warmly thanked for his services.

MINING IN SPAIN (ASTURIAS)—THE DEVONIAN FORMATION.—In our last article on "Mining in Spain," which was published on the 24th ult., the following sentence appeared:—"The assay of parcels shipped to England from these lodes and sold there yielded 68 per cent. silver-blende, and it is free from arsenic, lead, and copper. It is rather unfortunate that the small capital outlay for working these mines in the right way has not been found." The words *silver blende* appeared in this paragraph, owing to a little superfluous energy on the part of the compositor. We are sorry that such a mistake should have appeared. The meaning of the author will, of course, be apparent from the context.

GEOLOGY AND MINERALOGY OF SHASTA COUNTY.*

By HAROLD W. FAIRBANKS, F.G.S.A.

I.

SHASTA COUNTY occupies an important position in the structure and topography of the State, being situated at the head of the Sacramento Valley, and having its surface chiefly occupied with rugged mountains; the union of the Sierra Nevada and Coast Range. It is interesting alike for the great variety of its rock formations and the range of geological time represented by them, as well as for its mineral resources, whose richness is just beginning to be appreciated. It is in this county that the carboniferous was discovered by Dr. Trask, the first State Geologist. Since then the county has been the subject of geological investigation by the old State Survey under Professor Whitney, and particularly of late by the members of the United States Geological Survey. The geological problems here presented for investigation are of uncommon interest. Among them may be mentioned the disputed point concerning the relation of the Coast Range to the Sierra Nevada, that of the Cretaceous to the Metamorphic Series, and the possibility of the presence of older Paleozoic rocks as well as those of early Mesozoic age.

As a mining county it first came into prominence on account of the extensive placers which existed along nearly all the streams flowing into the Sacramento from the west. As the placers failed the gold and silver deposits were opened, but on account of the

Rebellious Character of the Ores

the operations were not generally profitable. It is only within the last few years that quartz mining has been carried on with any degree of success. Now the county is rapidly becoming one of the foremost producers of the precious metals in the State.

In undertaking an investigation of the county for the State Mining Bureau, I have thought best to give particular attention to geology. Too much emphasis cannot be laid on the necessity of a thorough knowledge of the underlying geological features of a mineral district before attempting to give a description of its ores. In the following report I have described as accurately as possible, with the time at my disposal, the general geology of the county and the geology of the ore deposits, gained by a visit to one or more of the typical mines in each district. All the mines could not be visited in the limited time, but especial attention was given to those districts not heretofore described in the mining bureau reports.

The map which I have prepared to accompany the report is intended to show the areas occupied by the various geological formations, and also the positions of the important mineral belts.

As yet I have had no opportunity to study the large collection of rocks made in the county, nor have the many new species of fossils from the older formations been classified, consequently the following notes are based almost wholly on field observations.

The Modern, or Quaternary, deposit of the Sacramento Valley has a width of about 20 miles on the southern boundary of the county, stretching from Gas Point on the west, to the lava a short distance east of the Sacramento River. It consists of stratified sands, gravels, and coarse conglomerates derived from the crystalline rocks of the surrounding mountains. These unconsolidated deposits narrow northward, and disappear before reaching Pitt River. In the vicinity of Anderson the deepest wells do not penetrate through them. Between Redding and Millville the drilled wells in many places pierce the underlying cretaceous shales, the water from which is generally somewhat brackish. The cretaceous beds inclose the modern deposits, basin-like on three sides. The cretaceous is covered by lavas on the east; on the north and west it rests against the auriferous series, which is in part carboniferous. I will now take up the

Detailed Description of the County,

beginning east of the Sacramento River, following the Sierra around to its junction with the Coast Range, and tracing the latter southward.

A hasty trip was made from Anderson east through Shingletown over the old Fort Crook road, to Fall River Valley, passing close by the northern base of Lassen's Butte.

The whole of this south-eastern part of the county is a great lava plain, gently sloping to the Sacramento River, and reaching an elevation of 5000 feet near the summit of the range. South of Bear Creek no deep canons have been eroded, though in scattered spots the thin lava crust has been cut through, exposing the sedimentary beds. The surface is that of broad ridges, generally well timbered, and with more soil than is generally found on the lava.

The south fork of Bear Creek, about a mile above its mouth, falls over the edge of the lava plateau to join the main fork where the underlying sandstones are exposed. Shales and sandstones are also exposed along the creek in the vicinity of Clark's mill for about two miles. Gold has been found in the gravels underlying the volcanic tufas in several places along Bear Creek associated with metamorphic pebbles. This indicates a former exposure of the auriferous series, higher in the mountains, which is now covered with lava. A thin seam of coal is reported from Snow Creek, and also some Upper Cretaceous fossils.

The elevation of Whitmore Post-office, on the Tamarack road, is 2150 feet. North Cow Creek, 1 mile away, is 600 feet lower. It has cut down to the

Cretaceous Beds,

which are exposed first about 3 miles above. In the north side of the creek, near Whitmore, a coal seam has been exposed; it is 14 inches thick, dipping north 30 deg. Up the creek thin seams of coal outcrop for several miles. One of these appears to be 10 inches thick and dips to the south-east 40 deg. Another aggregate of seams with clay layers between them has a thickness of 4 feet.

Where the Tamarack road strikes North Cow Creek there are large expanses of undisturbed Cretaceous sandstones, with many fossils. The ridge between this creek and Clover Creek is not high, and is formed entirely of lava fragments and bowlders imbedded in a matrix of volcanic ash or sand. About 6 miles east of Millville this ridge is replaced by hills of cretaceous shale, dipping slightly to the east and south. The adobe hills formed by this shale are about 3 miles across. On the west they are replaced by volcanic ash having a very barren surface. Near the western edge of the cretaceous bed is a conglomerate of bowlders derived from the old crystalline rocks resting unconformably on the cretaceous.

The cretaceous (Chico) beds appear on Clover Creek, about 3 miles east of Millville, and are continuous along the creek and hillside, up to where the creek divides; then they continue to appear in the valleys of the different branches, the total surface area being considerable.

* From the Californian State Mineralogist

(To be continued.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET—LONDON, APRIL 6.

Copper.

THE statistics for March (which appear on another page) were published on Monday, and were better than anticipated, as they show a decrease of 700 tons odd for the whole month. The markets opened on Monday at £40 15s. s.c. in dull tendency, and, after touching £40 11s. 3d., recovered the same day to £40 15s. again. On Tuesday it was improved by moderate buying to £41 s.c., and the business for the day totalled 900 tons. Wednesday's market, though restricted, was very steady at £41 2s. 6d. s.c. and £41 12s. 6d. to £41 13s. 9d. three months. Yesterday the market lacked support, and prices gave way to £40 18s. 9d. s.c. and £41 8s. 9d. three months, whilst to-day witnessed a further relapse, spot changing hands at £40 16s. 3d. and £40 15s. The close is steady at £40 15s. to £40 17s. 6d. s.c. and £41 6s. 3d. to £41 7s. 6d. three months. No transactions are advised in furnace material.

Tin.

The statistics which appear in full on another page show a large increase in the visible supply, but the effect which this might have had on the market was neutralised by the advance in silver values, and Straits tin advanced quickly during the first three days of the week, eventually touching £70 10s., a rise of over £2 per ton during the period named. On Thursday, however, the movement was reversed, in harmony with the drop in silver, and Straits tin touched £69. It closes to-day steady at £69 2s. 6d. to £69 5s. s.c., and £69 17s. 6d. to £70 three months. Billiton opened at 42 fl. s.c., and closes at 42¼, after touching 43 fl.

Pig Iron.

The Glasgow market opened firm at 43s. 1d. s.c., and varied gently between that price and 43s. 2½d. on the one hand, and 43s. 0½d. on the other. It closes at the latter prices, with hematite at 45s. 2d., and Cleveland at 36s. 4d. The shipments from Scotland last week amounted to 4182 tons, or 1403 tons less than in the corresponding period of last year.

Lead

was dull nearly all the week, but seems rather firmer at the close. The quotations are £9 3s. 9d. to £9 5s. soft foreign, and £9 6s. 3d. English.

Spelter

is also rather stronger in tone, and values are steady at £15 15s. to £15 17s. 6d. ordinaries, and £15 17s. 6d. to £16 specials.

Antimony

is quiet at £36.

Quicksilver

remains unchanged at £5 10s. and £5 9s. 6d. firsts and seconds respectively.

The following are to-night's (April 6) prices of metals:—

	£	s.	d.		£	s.	d.
Copper.							
Tough cake and ingot	43	2	6	.....	43	12	6
Best selected	44	0	0	.....	45	15	0
Sheets and sheathing	51	0	0	.....	52	0	0
Flat bottoms	54	0	0	.....	55	0	0
Chili bars							
Good merchantable, spot, & 3 months respectively	40	15	0	.....	41	6	3
Copper tubes, seamless					0	0	7½
Alloys.							
Brass: Wire					0	0	5½
,, Tubes (solid drawn)					0	0	5½
,, Sheets					0	0	5½
Phosphor Bronze: Alloys II.					88	0	0
,, ,, III. or V. Cog Wheel Brand					93	0	0
,, ,, VII.					95	0	0
,, ,, XI.					98	0	0
,, ,, Vulcan brand A1 B.C.	80	0	0		85	0	0
Duro Metal	80	0	0		85	0	0
Bull's Metal					70	0	0
Ferrobronze (Vivian's).							
Ingots ...per lb.	0	0	5¾				
Ordinary sheets, plates, bolts and bars	0	0	6¼				
Screw bolts and nuts	0	0	6½				
Pump rods, plain	0	0	7¼				
,, finished	0	0	10½				
Delta Metal: No. 4 (per ton)					73	10	0
,, Sheets and plates (per lb.)	0	0	10½				
,, Bars, round, square, flat (per lb.)	0	0	9½				
,, ,, hexagon (per lb.)	0	0	9				
Tin.							
English, ingots, f.o.b.	74	0	0	.....	74	10	0
,, bars	75	0	0	.....	75	10	0
,, refined	76	0	0	.....	76	10	0
Straits, spot and 3 months respectively	69	2	6	.....	69	17	6
Australian spot, and three months respectively	69	12	6	.....	70	7	6
Banca ,, (in Holland)	75	0	0	.....	75	2	6
Tin Plates: Charcoal, best quality per box	0	14	0	.....	0	16	0
,, ,, ordinary	0	11	6	.....	0	12	0
,, Coke, best quality	0	10	6	.....	0	11	9
,, ,, ordinary	0	10	0	.....			

These prices of tinplates are f.o.b. at Swansea: at Liverpool 6d. per box more.

Iron.							
Pig, G.M.B., f.o.b., Clyde, spot					2	3	0½
,, Scotch pig, No. 1 Gartsherrie					2	11	0
,, ,, Coltness					2	16	0
,, ,, Clyde					2	9	0
,, ,, Govan					2	4	0
Bars, Welsh, f.o.b. Wales					5	5	0
Plates ,, ,,					6	5	0
Bars, Staffordshire, at works					5	10	0
Sheets ,, ,,					6	15	0
Plates ,, ,,					6	10	0
Hoops ,, ,,					5	12	6
Ship plates, Middlesborough					4	17	6
Steel: English spring... nominal according to quality	11	0	0	.....	20	0	0
,, ,, cast	38	0	0	.....	42	0	0
,, Rails at works, according to section	3	12	6	.....	4	10	0
Lead.							
Spanish or soft foreign	9	3	9	.....	9	5	0
English pig, common					9	6	3
,, L.B.					9	15	0
,, sheet and bar					10	5	0
,, pipe					10	15	0
,, red					12	10	0
,, white					16	10	0
,, patent shot					13	15	0
Spelter.							
Silesian ordinary brands	15	15	0	.....	15	17	6
,, special brands	15	17	6	.....	16	0	0
English Swansea	16	7	6	.....	16	17	6
Sheet Zinc	18	10	0	.....	19	0	0
Antimony.							
Antimony					35	0	0
Quicksilver.							
Flasks, 75 lbs. warrants	5	10	0	.....	5	9	6
Manganese.					per unit.		
Ore, c.i.f., U.K. ports							
1st quality, 50 per cent. and upwards	0	0	11	.....	0	1	0
2nd ,, 47 per cent. to 50 per cent.	0	0	10	.....	0	0	11
3rd ,, 40 ,, 47 per cent.	0	0	8	.....	0	0	10
Aluminium.					Per lb.		
98-99½ per cent. (guaranteed 98 per cent. min.) in ingots (1 cwt. lots)					0	2	0
do do (5 cwts. and up)					0	1	11
Nickel.							
98-99 per cent. guaranteed	0	1	7½	...	0	1	8½

GOLD EXHIBIT FROM WESTERN AUSTRALIA.—This trophy, of which we, on February 10th, announced the purchase by the Western Australian Government for exhibition in London, has arrived, though not, as so many of our contemporaries stated, under the charge of Sir Malcolm Fraser—an error which he at once wrote contradicting. This gold is now being exhibited at the City house, 1 and 2, Gracechurch-street, of Messrs. Spink and Sons, and will be removed in a short time to their West-end establishment, 17 and 18, Piccadilly. There are 41 bars of gold, weighing from 140 to 190 ounces each, and 44 specimens of quartz, richly veined and studded with gold, the whole being of the value of about £35,000. A full description of the trophy, with illustrations, appeared in our issues of January 27th and February 10th

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bz*, Bornz; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "called up" column of British Mines, signifies that the mine is conducted on "Cost Book" principles; † in the "Head Office" column of African Mines, signifies that the address given is not that of the head office, but of a sub- or transfer office and †, following the names of African mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

☞ *The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.*

BRITISH MINES.

Name	Closing Price, Apr. 6, 1894.	Closing Price, Mar. 30, 1894.	Par.	Latest Dividend	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Atlas 7	—	—	1 0	—	0 12 6	12,000	Devon	Camborne.
Pine Ville ...C7	1/- 3/-	3/-	*	2/- May '81	6 11 6	6,000	Cornwall	Camborne.
Fatallack ... ...J	—	—	*	—	51 4 6	2,220	Cornwall	St. Just.
Carn Brea 7	12 12½	12½	*	2/6 Dec.,'93	21 5 0	6,000	Cornwall	Carn Brea.
Cook's Kitchen ..7	20/- 30/-	30/-	*	—	29 5 4	4,900	Cornwall	Camborne.
Cumberland I	—	—	1 0	5% May, '88	1 0 0	55,000	Cumberland..	7, Angel-court E.C.
Cwmystwyth	—	—	1 0	—	1 0 0	5,000	Cardigan	
Derwentwat'r.CLZ	—	—	1 0	—	1 0 0	10,000	Cumberland..	Manchester.
Devon Gt Cons.CA	15/- 20/-	2?/-	5 0	3/- Nov. '93	2 0 0	10,240	Devon	8, Finsbury-circus.
Dolcoath 7	78 79	78½	*	5/- Jan. '94	9 12 6	4,700	Cornwall	Camborne
Drakewalls CTM	—	—	1 0	—	1 0 0	100,000	Cornwall	Dashwood House.
East Rise Hills .7	—	—	*	—	1 18 3	4,183	Cornwall	79½, Gracechurch-st.
EastGrassington I	—	—	1 0	—	1 0 0	20,000	Yorkshire	Palmerston-building
East Pool A7	10¾ 11¼	11¼	*	5/- Oct. '93	0 9 9	6,400	Cornwall	Illogan.
Gawton .....CA	—	—	50/-	—	2 7 0	12,000	Devon	20, Great St. Helens.
Great Tavor.....I	2 3	3	4 0	5/- Apr., '92	4 0 0	15,000	Isle of Man ...	Douglas, Isle of Man.
Green Hurth ...I	—	—	1 0	-/6 June '89	0 19 0	32,000	Cumberland..	Newcastle.
Halkyn I	—	—	1 0	2/- Sep. '93	1 0 0	10,000	Flintshire.....	Chester.
Hexworthy 7	—	—	1 0	—	1 0 0	18,335	Devon	6 Queen-street-place
Isle of Man I	—	—	5 0	5/6 Sep. 93	5 0 0	14,000	Isle of Man ...	Chester.
Killifreth 7	3⅝ 3⅞	3⅞	*	3/6 Dec. '93	5 6 3	6,000	Cornwall	Truro.
Kingside.....I.R'	—	—	1 0	3/- May, 1892	1 0 0	15,919	Cardiganshire	6 Queen-street-place
Lead Hills I	17/6 22/6	22/6	6 0	3/- Sep. '92	6 0 0	20,000	Lanarkshire ...	30, Finsbury-circus.
Levant .....CT	—	—	*	10/- Aug.,'93	11 9 6	2,500	Cornwall	Penzance.
Lovell .....T	—	—	*	1/3 Nov.,'91	1 16 7	7,165	Wendron	3, Gt. Queen-st..S.W.
Minera (New) ...I	—	—	5 0	3/- Mar. '90	5 0 0	9,000	Denbighshire.	Minera, N. Wales.
Nenthall Tndle.LZ	—	—	1 0	6% Feb., '91	0 18 6	48,875	Northumberld	Newcastle-on-Tyne
New Balleswidd'n 7	—	—	1 0	—	1 0 0	50,000	Cornwall	St. Clement's Ho., E.C
New Cooks Kite. TC	—	—	*	—	10 18 3	4,900	Cornwall	Camborne.
Pedn-an-dres ...7	—	—	*	—	4 3 6	7,000	Cornwall	Redruth.
Phœnix United TC	6/- 7/-	7/-	*	1/- Mar. '90	6 9 9	12,000	Cornwall	Liskeard.
Polberro & Trev. 7	—	—	*	—	1 11 6	18,000	Cornwall	37, Walbrook.
Prince of Wales TC	2/- 2/-	3/-	10/-	—	—	—	Cornwall	6, Draper's-gardens.
Roman Gravels I.	—	—	10/-	—	—	—	Salop	11, Queen Vic -st., EC
Rushen I	—	—	1 0	5% Sept. '91	1 0 0	26,131	Isle of Man ...	Douglas.
So. Condurrow TC	19/- 2?/-	20/-	*	3/6 Apr. '93	7 12 1	6,123	Cornwall	20, Great St Helens
South Crofty TA	3¾ 3¾	3¾	*	—	16 16 6	6,120	Cornwall	Pool, Cornwall.
South Darran ... I.	—	—	—	—	—	—	Cardiganshire	6A, Austin Friars.
South Frances ...7	1⅜ 1⅞	22/6	*	—	18 1 0	4,500	Cornwall	Redruth.
Tincroft 7	12½ 13	13	*	3/- Dec. '93	15 7 6	6,000	Cornwall	Carn Brea.
Weardale I	—	—	4 0	1/3 Oct. '90	1 5 0	50,000	Durham.....	3, Lombard-court.
West Frances ...7	2⅝ 2⅞	2	—	2/6 May,'89	15 15 1	6,144	Cornwall	Camborne.
West Kitty 7	7¼ 7⅜	7⅜	*	4/- Jan, '94	0 12 0	6,000	Cornwall	37, Walbrook.
Wheal Agar ..TA	2 2¼	2¼	*	2/6 Aug. '88	22 0 8	6,000	Cornwall	Redruth.
Wheal Basset ..TC	3 3⅛	3⅛	*	10/- Apr.'88	12 4 2	6,144	Cornwall	Redruth.
Wheal Friendly..7	2/- 4/-	4/-	*	—	0 11 3	10,000	Cornwall	37, Walbrook, E.C.
Wheal Grenville 7	14 15	15	*	3/- Feb. '94	17 10 0	6,000	Cornwall	7, Union-court, E.C.
Wheal Kitty.....7	7/6 12/6	12/6	*	3/- Mar. '88	7 9 6	4,295	Cornwall	Truro.
Wheal Metal &F.7	— —	—	*	—	0 13 9	10,784	Cornwall	79½, Gracechurch-st

AUSTRALIAN AND NEW ZEALAND MINES.

Achilles Gld Fld.	1⅜ 2	2¾	1 0	—	1 0 0	80,307	New Zealand	3, Church Pas., E.C.
Aladdins Lamp G	1¾ 1⅞ xd	1 15/16 xd	1 0	1/- Mar. '54	1 0 0	100,000	N S Wales ...	4-6, Throg. Avenue.
Anglo-Saxon ...G	— —	—	1 0	2/- July, '89	1 0 0	51,000	Queensland ..	4, Lombard-court.
Australasian ..... G	2/- 2/6	2/6	1 0	-/6 Mar., '92	1 0 0	210,000	Queensland ..	6, Queen-st. place
Australian C	— —	—	20 0	1/6 Aug. '93	7 7 6	18,315	So. Australia	18, Old Jewry Chbrs
Aus. Pro. Hill Con.	1/3 1/9	1/9	1 0	1/- June, '91	1 0 0	540,000	N. S. Wales ...	Winchester House.
Blue Spur & G. G.	-/6 1/-	1/-	1 0	—	1 0 0	75,926	New Zealand	6, Gt. St. Helens'
Bonnie Dundee G	3/3 3/9	3/9	1 0	—	0 18 0	120,000	Queensland ..	3-5, Gracechurch-st
Brilliant Block...G	1¼ 1 15/16	1 15/16	2 0	—	2 0 0	250,000	Queensland ..	3, Gracechurch-st.
Brit. Brok. Hill S	2/6 3/6	3/-	5 0	—	5 0 0	240,000	N. S. Wales ...	Abchurch Chambers.
Broken Hill Prop.	2 5/16 2 7/16	2⅜	8 0	1/6 Dec. '93	0 8 0	960,000	N. S. Wales ...	Abchurch Chambers,
Carrington.....G	2/6 3/-	3/-	12/6	—	0 12 6	100,000	Queensland ...	9, Tokenhouse Yard.
Coromandel .....G	—	3/4	1 0	—	0 12 6	95,000	India	6-7, Queen-street-pl.
Craven's Cal.	3/6 4/- xd	4/-	6 0	-/3 Nov. '93	0 4 8	100,000	Queensland ..	30-1, S. Swithin's-le.
Croydon King Blk	— —	—	5/-	-/3 Apr., '94	0 5 0	60,000	N. Queensland	Leadenhall Bldg. E.C.
Cumbrind (New)G	-/6 1/-	1/-	1 0	2/6 Dec, '87	1 0 0	200,000	Queensland ..	Blomfield House.E.C.
DayDawn B.&W.G	4/3 4/3	5/3	1 0	-/6 Mar. '93	1 0 0	498,400	Queensland ..	3-5, Gracechurch-st.
Day Dawn P. C. G	3/9 4/3	5/3	1 0	-/6 Apr, '92	1 0 0	490,000	Queensland ..	Winchester Ho., E.C
Eaglehawk.....G	1/3 1/9	1/6	1 0	—	0 18 5	120,000	Victoria.....	31, Lombard-street.
Etheridge .....G	— —	—	5 0	—	0 5 0	324,000	Queensland ..	6-7, Queen-street-pl.
Golden Gate.....G	1/- 1/6	1/6	10/-	—	0 10 0	150,000	Queensland..	9, Tokenhouse Yard.
Glenrock .....G	2/6 3/-	3/-	1 0	—	0 19 6	225,000	N. Zealand ..	3-5, Queen-st., E.C.
Harriesville .....G	— —	—	1 0	-/6 July, '90	1 0 0	146,330	Victoria.....	6-7, Queen-street-pl.
Kabooonga .....G	1/8 1/10	2/-	10/-	—	0 10 0	500,000	Queensland ..	30, St. Swithin's-lane
Kangarilla .....S	-/9 1/3	1/3	1 0	—	1 0 0	88,275	So. Australia	68, Coleman-street.
Kapanga.....G	-/9 1/-	1/-	1 0	-/6 Jan. '91	0 18 9	250,000	N. Zealand ...	9, New Broad-street.
Kilkivan	— —	—	1 0	—	1 0 0	120,000	Queensland ...	4, Coleman-street.
Midas G. F. ....G	— —	—	1 0	—	1 0 0	180,000	Victoria.....	32, Poultry, E.C.
Mills' Day DawnG	1¾ 1¾	1¾ xd	1 0	-/6 Feb, '94	0 15 9	300,000	Queensland ..	3, Gracechurch-st.
Moruya ..... GS	— —	—	1 0	—	1 0 0	59,235	N. S. Wales ...	16, St. Helen's-place.
Moaman .....G	4/3 4/9	4/9	1 0	-/3 Jan. '94	1 0 0	185,000	Queensland ...	3-5, Gracechurch-st.
Mt. Leyshon .... G	1/- 1/6	1/6	1 0	-/6 Dec. '90	1 0 0	157,989	Queensland ...	7, Draper's-gardens.
Mountain Maid C	1/6 2/6	2/6	10/-	—	0 6 3	56,000	Queensland...	Leadenhall Bldgs.
Mt. Morgan Ex. G	2½ 2⅝	2⅝ xd	5/-	-/6 Mar., '94	0 2 0	180,000	Queensland ...	4, Tokenhouse Bldgs
Mt. Shamrock GB	— —	—	1 0	—	1 0 0	275,000	Queensland ...	13, Basinghall-st E.C
Mount Zeehan.....	-/6 1/-	1/-	1 0	—	1 0 0	193,257	Tasmania	Mansion Ho. Cham.
New Queen .... G	8/9 9/3	9/3	1 0	-/6 Apr., '94	0 19 6	158,915	Queensland ...	30, St. Swithin's-la.
Port Phillip .....G	— —	—	5 0	—	0 5 0	200,000	Victoria	57, Moorgate-st., E.C.
Queen's Bthdy Un	— —	—	1 0	—	0 10 0	—	Victoria	7-8, Gt. Winchester St.
Queens. Smelting	1/16 1/4	1/16	1 0	—	1 0 0	36,244	Queensland ...	9, Tokenhouse Yard.
ScottishAustralian	3/4 7/8	7/8	1 0	—	1 0 0	200,000	N.S. Wales ...	Winchester Ho. E.C.
Sunburst	— —	—	10/-	-/6 Mar, '92	0 10 0	150,000	Queensland ...	9, Tokenhouse Yard.
Tasmanian Crown	— —	—	1 0	—	1 0 0	175,000	Tasmania	8, Old Jewry, E.C.
Tipperary	— —	—	1 0	—	1 0 0	35,000	N. Zealand ...	2-5, Queen-st., E.C.
True Blue	1/6 2/6	2/6	1 0	—	1 0 0	53,000	Australia	Leadenhall Bldg. E.C.
Victoria.....	— —	—	1 0	-/6 Mar, '94	1 0 0	144,000	Char. Towers	32, Gresham-st., E.C.
Victory..... G	9/16 11/16 xd	11/16 xd	5 0	—	0 5 0	270,000	Queensland ...	32, Gresham-st , E.C
Waihi..... G	1¼ 1⅜	1 9/16	1 0	1/- Jan. '94	1 0 0	150,000	New Zealand	11, Abchurch-ln. E.C
Wentworth Ord.G	5/6 6/6	6/6	1 0	6/- Jan. '93	1 0 0	500,000	N. S. Wales ...	4-6, Throgmort. Ave

INDIAN AND ASIATIC MINES.

Bainghat Mysore.I.	5/- 8/-	6/-	1 0	—	1 0 0	160,000	India	6-7, Queen-street-pl.
Burma Ruby.....S	5/- 5/6	6/9	1 0	—	0 17 0	300,000	Burmah	Suffolk House, E.C.
Champion Reef...G	3⅜ 4	3 15/16	1 0	—	1 0 0	200,000	India	6-7, Queen-street-pl.
Colar Central ...G	-/4⅜ -/7⅜	-/7⅛	1 0	—	1 0 0	270,000	India	Dashwood Ho., E.C.
Coromandel..... G	5/16 5/6	5/6	1 0	—	0 12 6	120,000	India	6 7, Queen-st.-place.
Devala Moyar ...G	— —	—	1 0	—	1 0 0	200,000	India	34, Nicholas-lane.
Gemming&Mining	— —	—	2 0	—	1 7 6	24,456	Ceylon	183, Gresham House.
Gold Fids Mysore G	24/- 25/-	24/6	1 0	1/- July '92	1 0 0	220,000	India	6-7, Queen-street pl.
Gold Fids Siam G	— —	—	1 0	—	1 0 0	150,000	Siam	19, St. Swithin's-lane.
Hyderabad Dec...	— —	—	10 0	—	10 0 0	1,000,000	Deccan	16, St. Helen's-place.
Kempinkote GdFd	1/9 2/-	1/10½	5 0	—	0 3 0	698,650	India	6-7, Queen-st.-place.
Mysore .....G	3 3⅛	3⅜	1 0	3/- Mar, '94	1 0 0	225,000	India	6-7, Queen-street pl.
Mysore Reefs ...G	11/- 12/-	12/-	1 0	—	0 19 0	200,000	India	6-7, Queen-street-pl.
Mysore West ...G	4/- 4/6	4/-	1 0	—	1 0 0	130,000	India	Dashwood Ho., E.C.
Mysore Wynaad G	1/6 1/9	1/9	1 0	—	1 0 0	250,000	India	Dashwood Ho., E.C.
Nine Reefs .....G	2/3 2/9	2/9	10/-	—	0 10 0	250,000	India	6-7, Queen-street-pl.
Nundydroog.....G	1 1/16 1 3/16	1⅜	1 0	1/- Mar. '94	1 0 0	200,000	India	6-7, Queen-street-pl.
Ooregum (Dt.O.)C	4 15/16 5 1/16	5	1 0	4/- Mar., '94	1 0 0	145,000	India	6-7, Queen-street-pl.
Do. (10% Pref.).	5 9/16 5 11/16	5⅝	1 0	4/- Mar., 94	1 0 0	120,000	India	6-7, Queen-street-pl.
Pahang Corpn. ...	2/6 3/6	3/6	1 0	15% Apr. '89	1 0 0	200,000	Malay Penin.	Blomfield Ho., E.C.
Pahang Kabang....	— —	—	1 0	—	1 0 0	394,740	Malay Penin.	4a, Jeffrey's sq., E.C.
South F. Mysore G	5/3 5/9	5/9	4/-	—	0 3 9	133,074	India	6-7, Queen-street-pl.
Springdale.....	—	3/- xd	4/-	16¼% Dec. '93	0 4 0	200,000	India	20, Abchurch n. E.C.

EUROPEAN MINES.

Alamillos L	3⅛ 3⅜	15/-	2 0	1/6 Mar. '92	2 0 0	25,000	Spain	6, Queen-street-place
Argentella C	— —	—	1 0	—	1 0 0	133,165	Corsica	16, Philpot-lane.
Bratsberg C	— —	—	1 0	—	0 18 0	120,000	Norway	1, Gresham-buildings
English Cr. Spelter	3⅝ 3⅞	3⅝	1 0	5% Dec. '92	1 0 0	84,000	Lombardy	9, Queen-street-place
Fortuna L	3⅛ 3⅜	3⅜	2 0	1/3 Mar. '92	1 0 0	25,000	Spain	6, Queen-street-place
Libiola.....C	3 3¼	3¼	5 0	2/6 Sept. '92	5 0 0	80,000	Italy	Dashwood Ho., E.C.
Linares L	3⅝ 3¾	3¾	3 0	5/- Sep. '93	3 0 0	16,000	Spain	6, Queen-street-place
Marbella I	61/- 63/-	62/-	10 0	8% Aug. '91	10 0 0	25,000	Spain	78, Queen Victoria-st.
Mason & Barry...C	42/6 47/6	47/6	5 0	2/- May. '93	5 0 0	185,172	Portugal	87, Cannon-street.
Oscar .....G	— —	—	5 0	—	0 4 6	117,240	Norway	6A, Austin Friars.
Pestarena .....G	1/6 2/-	2/-	3 0	—	3 0 0	67,809	Italy	6-7, Queen-street-pl.
Pontgibaud.....L	10 12	12	20 0	12½% Dec. '92	20 0 0	14,000	France	6-7, Queen-street-pl.
Rio Tinto C	15 11/16 15 13/16	15⅝	10 0	7/- Nov., '93	10 0 0	325,000	Spain	30, St. Swithin's-lane
Do. (Mort. Bonds)	103 104	105	100 0	5% Jan. '91	100 0 0	2,158,960	Spain	30, St. Swithin's-lane
Do. (2nd do.)	101 102	103	100 0	5% Jan. '91	100 0 0	1,127,180	Spain	30, St. Swithin's-lan
Sipanji .....SQ	8/- 8/-	8/-	1 0	—	0 19 0	85,000	Servia	120, Bishopsgt-st, Wn.
Tharsis.....C Sul	4⅞ 5⅛	5⅜	2 0	12½% Mar. '94	2 0 0	625,000	Spain	Glasgow.
West Prussian Pre.	—	10¼	10 0	8% Jan. '93	10 0 0	5,450	Germany	Walbrook Ho., E.C.
West Prussian Or.	—	18	10 0	8% Jan. '92	10 0 0	14,550	Germany	Walbrook Ho., E.C.

NORTH AMERICAN MINES.

Name.	Closing Price, Apr. 6, 1894	Closing Price, Mar. 30, 1894.	Par.	Latest Dividend.	Called up per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s.			
Almada and T... S	-/3 -/9	-/9	2/6	—	0 2 6	351,008	Mexico	6, Queen-street-place
American Belle...S	1/9 2/3	1/9	1 0	-/6 Mar. '91	1 0 0	400,000	Colorado	25A, Old Broad-street.
Big Creek	— —	—	1 0	1/- Dec. '91	1 0 0	80,038	Nevada	2, Pancras-lane, E.C.
California	— —	—	1?/-	-/6 May '90	0 8 9	129,571	Colorado	St George's Ho E.C.
Canadian Phos. P	¼ ½	¾	1 0	-/6 Nov, '90	1 0 0	73,334	Canada	188, Fenchurch-st.
Chispas	— —	—	1 0	—	1 0 0	221,876	Mexico	33, Broad-st. Av. E.C.
Colorado Silver...S	— —	—	1 0	—	1 0 0	112,491	Colorado	Abchurch-chbrs. E.C
Cortez	— —	—	1 0	3 % Feb. '93	1 0 0	300,000	Nevada	Suffolk House, E.C.
De Lamar.. .....GS	20/- 21/-	20/6	1 0	1/- Jan. '94	1 0 0	400,000	Idaho.....	6, Draper's-gardens.
Dickens Custer GS	— -/3	-/3	1 0	—	0 19 9	420,000	Idaho....	Winchester Ho. E.C.
Elkhorn .....S	11/- 12/-xd	10/6	1 0	-/9 Mar, '94	1 0 0	175,007	Montana	6, Draper's-gardens.
Emma .....S	-/3 -/6	-/6	5 0	—	0 5 0	367,788	Utah	15, Geo-st, Mansn. Ho
Flagstaff .....S	-/3 -/6	-/6	1 0	—	0 18 3	240,000	Utah	Dashwood Ho., E.C.
Garfield ..... GS	— —	—	1 0	-/6 Dec. '88	0 19 6	98,185	Nevada	Suffolk House, E.C.
Golden Feather G	7/- 8/-	7/6	1 0	—	1 0 0	180,000	California ...	St. Stephens Co E.C.
Golden Gate.....	5/6 6/6	6/5	1 0	—	0 19 0	79,600	California ...	St Stephens Co E.C.
Golden Leaf..... G	-/9 1/3	1/3	1 0	—	1 0 0	200,253	Montana	8, Draper's Gardens.
Golden Valley...G	— —	—	1 0	—	1 0 0	55,507	Colorado	15, Angel Court.
Harquahala.... G	17/- 18/-	18/6	1 0	—	1 0 0	300,000	Arizona	6, Drap- 's Gardens.
Ho comb Valley G	-/10½ 1/1½	1/-	5 0	-/9 Oct, '93	0 5 0	300,000	California ...	14, Cornhill. E.C.
Idaho..... GS	1/10½ 2/1½	1/-	1 0	—	0 4 8	143,439	Idaho	140, Le denhall-st.
Jackson Goldfields	— —	—	5 0	—	0 5 0	408,635	California	6, Drapers' Gardens.
Jay Hawk ..... G	6/6 7/6	7/6	1 0	-/6 Dec. '92	1 0 0	285,000	Montana	Dashwood House,
Kohinoor "B" GS	— —	—	1 0	-/6 June, '81	1 0 0	112,931	Colorado	Bloomfield Ho., E.C.
La Plata..... S	-/6 -/9	-/9	5/-	1/3 Oct. '82	0 4 3	405,000	Colorado	11, Poultry, E.C.
Maid of Erin	— —	—	1 0	4c. pshMar.'94	1 0 0	575,000	Colorado	43, Threadneedle-st.
Mammoth Gold ...	— —	—	1 0	—	1 0 0	400,000	Pinal Arizona.	257, Winchester Ho.
Mesq. d'l Oro (P) G	¼ 1	1	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C.
Mesq. d'l Oro (D.) G	⅛ ⅜	⅜	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C
Montana	6/- 6/6	6/3	1 0	5% April '91	0 19 0	660,000	Montana	Gresham House, E.C
New Colorado	— —	—	1 0	—	0 17 0	65,000	Colorado	Abchurch Cham. E.C
N. Consolidated SC	— —	—	1 0	—	1 0 0	160,000	Eberhardt, U.S	19a, Coleman-street.
N. Eberhardt.....S	— —	—	5/-	—	0 3 6	248,576	Nevada	15, Angel-court. E.C
N. Gold Hill.....G	— —	—	1 0	—	0 19 9	191,045	N. Carolina	15, George-st., E.C.
New Guston .....S	6/- 6/6	7/-	1 0	1/- Oct. '92	1 0 0	110,000	Colorado	25A, Old Broad-st.
New London	— —	—	2/6	—	0 2 6	327,816	New Carolina	55, Bishopsgt.-st. Wn
N. Hoover Hill...G	— —	—	10/-	-/9 Dec. '85	0 10 0	120,000	N. Carolina ...	Langthorne Ho., E.C
Palmarejo .....GS	1/6 2/-	2/-	1 0	—	1 0 0	418,888	Mexico	4, Copthall-buildings
Pinos Altos.....GS	2/- 2/6	2/6	1 0	-/6 Mar.* 90	1 0 0	300,000	Mexico	110, Cannon-street.
Pittsburg Con. G	— —	—	1 0	1/6 Mar. '88	1 0 0	77,147	Nevada	Suffolk House, E.C
Poorman Con.....	7/- 7/6	6/3	5/-	—	0 5 0	273,948	Idaho	5, Copthall-b'gs. E.C
Red Mountain ...S	— —	—	1 0	—	1 0 0	46,636	Colorado	11, Poultry, E.C.
Richmond ...GSL	7/- 9/-	½	5 0	1/- Sep. '93	5 0 0	54,000	Nevada	44, Coleman-street.
Ruby .....GSL	— —	—	5/-	—	0 5 0	221,371	Nevada	22 St. Mary Axe.
Sierra Buttes ...G	8/9 11/3	11/-	2 0	-/6 Oct, '93	2 0 0	122,500	California	138, Leadenhall-st.
Do. Plumas Eur. G	¾ ⅞	15/6	2 0	-/9 Oct. '93	2 0 0	140,285	California	138, Leadenhall-st.
Springdale.....G	2/6 3/-xd	3/- xd	$1	16½ % Dec. '92	$1	1,000,000	Colorado	20, Abchurch Lane.
United Mexican S	1/- 1/6	1/6	1 0	2/6 May, '87	1 0 0	906,654	Mexico	3, Gt. Winchester-st.
Viola (New).....	— —	—	1 0	—	1 0 0	150,000	Idaho	Broad-st, House, E.C.

SOUTH AND CENTRAL AMERICAN MINES.

Antio. (Pref.) G.S.	— —	—	1 0	-/6 Mar. '90	1 0 0	22,458	Colombia	184, Gresham House
Antioquia(ordiny)	— —	—	1 0	—	1 0 0	42,453	Colombia	184, Gresham House
Callao Bls.... .....G	-/9 1/3	1/3	1 0	—	1 0 0	320,000	Venezuela ...	50, Old Broad-street.
Camacones..... C	⅛	⅛	2 0	—	2 0 0	67,000	Chili	123, Bishopsgt. Wn.
Caratal.....	-/5 -/7	-/6	2 6	—	0 2 4	657,326	Venezuela ...	57, Moorgate-st. E.C
Colon ....G	-/6 1/-	1/-	1 0	—	1 0 0	200,000	Colombia	5, Copthall-bdgs., E.C.
Colorado Nit. ...N	3½ 3¾	3½	5 0	7/6 May, '89	5 0 0	32,000	Chili	12, King-st., Liverp'l.
Colombian Hy...G	16/6 17/6	16/6	1 0	1/- Dec. '93	1 0 0	75,000	Colombia	10, Blomfield-street,
Copiapo C	1 11/16 1 13/16	1⅞	2 0	2/- Dec. '93	2 0 0	100,000	Chili	Dashwood House, E.C
Darien..... G	— —	—	1 0	—	1 0 0	71,359	Colombia	Manchester.
Don Pedro.....G	5/6 6/6	5/-	1 0	—	1 0 0	133,102	Brazil.....	24-5, Devonsh.Cs E.C
El Callao .....G	⅞ 1⅛	1⅛	5 0	2 fro. Nov,'90	5 0 0	257,600	Venezuela ...	8, Bishopsgt.-st, Wn.
Frontino & B....G	19/- 20/-	20/-	1 0	1/6 Dec. '93	0 19 6	128,662	Colombia	184, Gresham House.
Glenrock .....G	2/6 3/-	3/-	1 0	—	0 19 6	199,948	Argen. (& Ind)	3-5, Queen-street, E.C
Glenrock (Pref.)...	— —	—	1 0	—	0 16 0	16,232	Argen. (& Ind)	3-5, Queen-street, E.C
Gravel.....G	6/6 7/-	5/9	1 0	—	0 19 6	160,000	Colombia	10, Blomfield-street.
Javali ....G	— —	—	2/-	8¾ % '91	0 2 0	105,334	Nicaragua.....	139, Cannon-street.
Julia Nit. .....N	3/- 5/-	5/-	5 0	—	5 0 0	22,000	Chili	79½, Gracechurch-st.
Lautaro .....N	4½ 4¾	3½	10 0	10/- Sep. '89	10 0 0	25,000	Chili	70, Gracechurch-st.
Liverpool .....N	— —	—	5 0	15/- Aug. '89	5 0 0	22,000	Chili	Liverpool.
Loma .....G	-/10⅜ 1/1⅛	1/3	1 0	—	1 0 0	300,000	Colombia	5, Copthall-buildings
London Nit.....N	— —	—	5 0	30% Feb. '89	5 0 0	10,000	Chili	9, Gracechurch-st.
LondonNit.(Pref.)	— —	—	5 0	18% Feb. '89	5 0 0	22,000	Chili	9, Gracechurch-st.
Macate	2/3 2/9	3/-	2/-	—	0 1 0	—	Peru	11, Old Broad-st. E.C
Orita ..

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

Name.	Closing Price, Apr. 6, 1894.	Closing Price, Mar 30, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Joe's Luck.....G	1/6 2/6	2/6	1 0	—	1 0 0	57,404	De Kaap	11, Queen Vic.-st.
Jubilee .....G	5¾ 5⅞	5⅝	1 0	30% Apr. '94	1 0 0	30,000	Witwatersrdt.	8, Old Jewry.†
Jumpers .....G	4 1/16 4 1/16	4¾	1 0	10% Jan. '93	1 0 0	100,000	Witwatersrdt.	29, HolbornViaduct.††
Kleinfontein . G	1⅛ 1⅜	1⅛	1 0	—	1 0 0	150,000	Witwatersrdt.	8. Old Jewry.
Klerksdorp ....G	1/3 1/9	2/6	1 0	—	1 0 0	150 007	Transvaal	110, Cannon-street.
Knight .....G	17/- 18/-	19/6	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-street, E.C.
Langlaagte Est. G	4⅜ 4⅝	4⅜	3 0	12½% Mar. '94	1 0 0	467,000	Witwatersrdt.	59, HolbornViaduct.†
Lisbon-Berlyn .. G	2/6 3/-	3/-	2 6	—	0 1 6	883.233	Lydenburg ...	110, Cannon-street.
Luipaards Viei Est.	12/6 13/-	12/-	1 0	6% Mar. '90	1 0 0	344,003	Witwatersrdt.	8, Old Jewry.
Main Reef.....G	1 1 1/16	1⅛	1 0	—	1 0 0	300,000	Witwatersrdt.	Warnford-court.†
Manica Ophir	— —	—	1 0	—	1 0 0	98,000	Mozambique..	2, Pinner's Court.
May Consol. .....G	10/6 11/-	12/6	1 0	—	1 0 0	430,000	Witwatersrdt.	4, Lothbury.†
May Deep Level G	7/6 8/6	9/-	1 0	—	1 0 0	148,000	Witwatersrdt.	31, Cornhill, E.C.
Metropolitan ... G	1 1/16 1 3/16	1 1/16	1 0	—	1 0 0	75,000	Witwatersrdt.	1, Crosby Square.†
Meyer & Charl....G	5 9/16 5 11/16	5 11/16	1 0	25% Dec. '93	1 0 0	71,687	Witwatersrdt.	Warnford-court.†
Mitchell .....G	— —	—	1 0	—	1 0 0	45,000	Witwatersrdt.	Kimberley.
Modderfontein.. G	7/- 7/6	7/9	1 0	—	1 0 0	200,000	Witwatersrdt.	Warnford-court.†
Moodies G.&E....G	8/- 9/-	8/6	1 0	-/4 May '90	1 0 0	240,000	De Kaap	8, Old Jewry.†
Moodies (15/- p.)G	4/- 5/-	3/6	1 0	—	0 15 0	120,000	De Kaap	8, Old Jewry.
Namaqua C	15/16 15/16	20/-	2 0	2/6 July '91	2 0 0	194,351	Namaqualand.	34, Leadenhall-bldg.
New Chimes..... G	1 13/16 1 15/16	1¾	1 0	—	1 0 0	70,000	Witwatersrdt.	8, Old Jewry, E.C.
New Croesus..... G	1 5/16 1½	1 5/16	1 0	5% Aug. '92	1 0 0	195,000	Langlaagte ..	4, Bishopsgt.-st, Wt.
New Jagersf. ...D	16 9/16 16 11/16	16 15/16	10 0	5% Mar., '94	10 0 0	100,000	Transvaal	5, Copthall-buildings
New Primrose ...G	4 9/16 4 11/16	4¾	1 0	4/- July, '93	1 0 0	230,000	Witwatersrdt.	2, Draper's-gardens.
Nigel .....G	3 1/16 3⅛	3⅛	1 0	10% Mar. '94	1 0 0	160,000	Witwatersrdt.	1, Crosby-square.
Nooitgedacht E. G	— —	—	1 0	—	1 0 0	160,000	Lydenburg ...	8, Old Jewry.
Oceana	2¾ 2½	2 1/16 xd	1 0	25/- Nov. '89	1 0 0	150,000	Transvaal	4, Sun Court, E.C.
Ophir Concess. ...	1/3 1/6	1/-	1 0	—	0 18 6	111,857	E. CoastAfrica	31, Lombard-street.
Orange F.S.E. ...D	3¾ 4⅛	3⅞	1 0	—	1 0 0	284,000	OrangeF.State	10, Moorgate-street.
Oriental .....G	1/6 2/-	2/-	1 0	—	1 0 0	448,450	De Kaap	Jamaica-bgs.Cornhill
Otto's Kopje.....D	2/3 2/9	2/3	1 0	—	0 19 3	500,000	Kimberley ...	115, Cannon-st.,E.C.
Pearl Central... G	⅞ 1	1 1/16	1 0	—	1 0 0	138,750	Transvaal	29-30, Hol. Via., E.C.

Name.	Closing Price, Apr. 6, 1894.	Closing Price, Mar 30, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Piggs Peak .....G	-/6	-/6	1 0	—	1 0 0	230,325	Swazieland ...	6, Queen-street-place
Potchefstoom ... G	—	4/-	1 0	—	1 0 0	161,000	Potchefstroom	19, Bury-st., E.C.
Princess Estate G	1 1/16 1¼	1⅜	1 0	—	1 0 0	72,046	Witwatersrdt.	33, Cornhill, E.C.
Randfontein .....G	13/3 13/9	12/9	1 0	—	1 0 0	1,986,500	Witwatersrdt.	59, HolbornViaduct.†
Read's Drift .....D	8/- 9/-	10/-	1 0	—	—	50,000	Transvaal	19, Finsbury circus.
Robinson .....G	5⅝ 5¾	5⅝	5 0	4% June '93	5 0 0	543,750	Transvaal	59, Holborn Viaduct.††
Roodepoort Un. G	2 1/16 2 1/16	—	1 0	—	1 0 0	100,000	Witwatersrdt.	Warnford-court.†
St. Augustine ...D	—	-/4½	1 0	—	1 0 0	465,000	Griqualand W	30-1, St. Swithin's-la
Salisbury New ...G	2⅝ 2¾	2⅝	1 0	—	1 0 0	93,000	Witwatersrdt.	1, Crosby-square.†
Sheba .....G	23/9 24/3	23/6	1 0	-/6 April '94	1 0 0	614,450	Lydenburg ...	85, Gracechurch-st.
Silati .....G	3/9 4/3	4/6	1 0	—	1 0 0	625,000	Zoutpansberg.	4, Sun Court, E.C.
Simmer & Jack...G	5 15/16 6 1/16	6⅛ xd	1 0	10% Nov '93	1 0 0	85,000	Witwatersrdt.	33, Cornhill.
S.A. Gold Trust ...	19/- 20/-	18/6	1 0	10% April '93	0 10 0	220,000	South Africa..	8, Old Jewry.
Spitzkop.....G	2/3 2/9	3/-	1 0	—	1 0 0	144,531	Lydenburg ...	15, Bishopsgt-st, Wt.
Stanhope .....G	1⅜ 1⅞	1 1/16	1 0	50% May. '93	—	34,000	Witwatersrdt.	1, Crosby Square.†
Sutherland E. ...G	5/10½ 6/1½	4/-	1 0	—	0 18 0	220,000	Zoutpansberg.	3, Budge-row, E.C.
Teutonia.....G	— —	—	1 0	—	1 0 0	96,000	Witwatersrdt.	8, Old Jewry.
Trans. Coal Trust...	11/3 11/9 xd	11/9 xd	1 0	-/6 Oct, '93	1 0 0	439,965	Witwatersrdt.	Broad-st, House, E.C
Trans. Est. & Dev.	10/9 11/3	11/-	1 0	—	1 0 0	285,700	Transvaal	76, OldBroad-st. E.C.
Trans. Gold .....G	38/6 39/-	37/-	1 0	1/- Dec, '93	1 0 0	250,000	Transvaal	Suffolk House, E.C.
Trans. Land (15/-)	3/- 4/-	3/-	1 0	—	0 15 0	250,695	Transvaal	33, Cornhill.
Un. Ivy Reef.....G	1 3/16 1 5/16	21/3	1 0	—	1 0 0	45,000	Transvaal	110, Cannon-street
Un. Langlaagte ...	⅞ 1 1/16	⅞	1 0	—	1 0 0	100,000	Witwatersrdt.	23, St. Swithin's-la.
Van Ryn ..... G	1 1/16 ⅞	⅞	1 0	—	1 0 0	99,810	Witwatersrdt.	1,Crosby-square.†
Victory Hill .....G	— —	—	1 0	—	1 0 0	108,000	De Kaap	Portland House, E.C.
Village Main Reef	4⅛ 4⅜	4⅜	1 0	—	1 0 0	132,000	Witwatersrdt.	8, Old Jewry.
Virginia.....G	— —	—	1 0	—	1 0 0	48,335	Transvaal	26, Budge-row, E.C
Vogelstruis .....G	— —	—	1 0	—	1 0 0	150,000	Witwatersrdt.	34, Leadenhall-bldgs.
Wemmer ..... G	4 13/16 4⅞	4⅜	1 0	10% Nov. '91	1 0 0	55,000	Witwatersrdt.	19, Bury-street.†
Witwatersrandt ...	— —	—	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-st., E.C.
Wolhuter .....G	3 1/16 3 1/16	3⅝	1 0	2/- Apr., '94	1 0 0	120,000	Witwatersrdt.	Warnford-court.†
Worcester .....G	1⅞ 2	2	1 0	—	1 0 0	90,727	Witwatersrdt.	8, Old Jewry.†
Zwartland Land ...	— —	—	1 0	—	0 16 0	150,000	Transvaal	19, Birchin-lane,E.C.

METAL TRADE STATISTICS.

MARCH, 1894.

COPPER.

(From Messrs. Henry R. Merton and Co.'s Circular for March, 1894.)

	Mar. 31, 1894.	Mar. 15, 1894.	Feb. 28, 1894.	31st March. 1893.	1892.	1891.
	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
STOCKS IN ENGLAND AND FRANCE:—						
Liverpool and Swansea, Chili Bars	30,541	30,466	30,353	30,112	23,074	17,187
,, ,, Chili Ingots	456	456	556	—	385	327
,, ,, Chili Ores and Regulus (fine) ...	186	174	312	188	413	191
,, ,, Other Stuff (fine) & English Copper	4,612	3,599	4,727	5,987	7,466	11,761
London (including landing)	5,233	5,470	5,366	7,615	8,559	7,412
Stocks of fine Copper in Havre, Rouen, Bordeaux and Dunkirk	1,719	2,249	2,390	6,419	6,114	18,725
	42,747	42,414	42,754	50,321	51,011	55,603
ADVISED FROM CHILI by Mail and Cable, Fine Copper ...	3,100	2,950	2,850	4,200	3,000	3,650
,, ,, Australia, by Mail and Cable, Fine Copper	750	800	750	750	300	1,000
	46,597	46,164	47,354	55,271	54,311	60,253
Price of Chili Bars and G.M.B.'s per ton	£40 15 0	£41 2 6	£41 0 0	£45 5 0	£48 5 0	£53 2 6

COMPARATIVE STATEMENT.

—	Stock in England and France and Afloat thereto from Chili and Australia.	Price of G.M.B.	Arrivals: England and France.	Arrivals: Other European Ports.	Arrivals: England & France from Spain and Portugal (excluding Pyrites).	Arrivals: England & France from Other Countries.	Charters from Chili to Europe.	Shipments from Australia to London.	Total Suppl's.	Total Deliveries. †
			From N. America.							
Month ending	Tons.		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
31st March 1894	46,597	£40 15 0	2,546	3,096	1,484	1,639	1,500	550	10,575	11,342
28th February ... ,,	47,364	41 0 0	3,198	3,276	647	764	1,950	550	10,38-	10,173
31st January ... ,,	47,152	41 5 0	4,921	2,809	1,477	890	1,350	500	11,947	12,090
31st December ...1893	47,295	42 15 0	3,543	4,252	1,687	852	2,700	500	13,839	13,371
30th November ,,	46,827	43 0 0	6,146	4,388	1,332	5,684	1,400	450	19,400	20,613
31st October ..... ,,	48,040	42 2 6	7,097	6,275	999	3,082	2,200	1,000	20,653	20,517
30th September ,,	47,904	41 17 6	7,940	3,971	1,255	621	1,700	600	16,087	16,144
31st August ..... ,,	47,961	41 12 6	4,272	2,288	1,535	645	1,500	400	10,940	13,462
31st July ..... ,,	50,483	41 12 6	4,236	2,412	614	2,607	2,400	400	12,669	12,141
30th June ..... ,,	49,955	43 10 0	1,914	2,310	1,958	2,548	1,850	550	11,130	11,126
31st May ..... ,,	49,951	43 2 6	3,179	987	1,291	1,271	1,750	450	8,928	11,071
30th April..... ,,	52,094	44 10 0	2,521	905	799	1,084	1,600	550	7,459	10,836
			51,818	37,269	14,778	21,747	21,900	6,500	154,012	162,686
31st March 1893	55,271	45 5 0	1,312	687	1,877	3,291	850	600	8,417	10,566
28th February ... ,,	57,420	45 12 6	1,821	632	1,170	2,785	3,000	450	9,858	10,945
31st January ... ,,	58,507	45 2 6	3,266	455	1,452	4,899	1,000	700	11,773	9,011
31st December ...1892	55,745	46 17 6	3,235	542	2,555	3,006	2,600	300	12,238	9,991
30th November ,,	53,498	47 17 6	2,822	623	690	1,725	1,500	700	8,06-	10,640
31st October.. ... ,,	56,078	45 12 6	752	850	762	2,922	1,650	500	7,436	9,840
30th September ,,	58,482	44 2 6	1,048	535	1,619	2,315	1,750	400	7,667	8,923
31st August ..... ,,	59,718	44 7 6	2,887	324	965	2,583	1,900	400	9,059	9,079
31st July ..... ,,	59,738	44 17 6	2,893	390	2,146	3,744	2,200	650	12,043	8,889
30th June ..... ,,	56,604	44 17 6	2,909	416	2,346	4,745	1,600	300	12,3:5	9,476
31st May ..... ,,	53,965	46 7 6	2,841	664	2,288	1,215	2,150	500	9,658	9,521
30th April..... ,,	53,628	45 12 6	1,968	1,284	2,422	2,968	1,500	100	10,242	10,725
			27,754	7,402	20,292	35,198	21,500	6,00)	118,745	117,786
31st March 1892	54,311	46 5 0	2,260	1,667	2,012	2,013	1,750	300	10,002	12,472
29th February ... ,,	56,781	44 5 0	2,262	495	1,724	1,277	2,000	300	8,058	8,739
31st January..... ,,	57,482	44 12 6	2,809	893	750	1,571	1,525	350	7,898	6,480
31st December...1891	56,044	46 15 0	1,720	1,575	2,049	3,305	1,200	600	10,449	12,025
30th November ,,	57,620	44 12 6	2,007	1,417	872	1,825	2,050	400	18,571	10,766
31st October..... ,,	59,815	46 5 0	1,427	1,244	1,734	4,893	900	800	10,998	10,833
30th September ,,	59,450	51 2 6	3,045	929	2,181	1,975	2,950	700	11,780	11,989
31st August ..... ,,	59,629	52 10 0	3,805	1,593	1,436	2,262	2,300	350	11,746	9,899
31st July ..... ,,	57,782	52 0 0	3,983	429	1,336	1,656	1,400	700	9,504	9,107
30th June ..... ,,	57,325	55 5 0	2,515	1,510	3,358	3,253	1,400	500	12,536	13,469
31st May ..... ,,	58,258	55 5 0	2,646	1,370	2,021	3,805	1,250	400	11,992	13,053
30th April..... ,,	59,316	51 12 6	3,847	756	2,208	1,722	1,750	800	11,083	12,020
			32,328	14,438	21,681	29,567	20,475	6,200	124,677	130,519

† Including Chilian and North American for all Europe.

TIN.

(From Messrs. A. Strauss and Co.'s Circular for March, 1894).

	28th February, 1894.	31st March, 1894.	31st March, 1893.	31st March, 1892.
	Tons.	Tons.	Tons.	Tons.
Straits and Australian spot	5,239	5,487	2,963	2,832
Ditto ditto landing	1,105	1,094	495	332
Straits, afloat	3,515	4,000	4,210	1,960
Australian, afloat	570	394	690	537
	10,429	10,975	8,558	5,661
Banca, on Warrants.....	427	1,120	1,142	1,153
Billiton, spot	525	872	573	316
Ditto afloat.....	1,948	1,516	592	1,173
	13,329	14,493	10,865	8,303
Total afloat for United States	915	1,440	3,100	2,575
Estimated stock in America.....	400	400	4,565	1,520
Total	14,644	16,333	18,530	12,398
Prices of Straits and Australian.....	£85 15 0	£83 7 6	£94 17 6	£89 15 0
Deliveries during the month in London.....	1,791	2,009	1,550	1,529
Ditto ditto Holland.....	765	452	713	657
	2,556	2,461	2,263	2,186

Shipments during the month from Straits to London ... ... 2,500 Tons
,, ,, ,, Australia to London ... ... 275 ,,
,, ,, ,, London, Havre, and Holland to America ... 625 ,,
,, ,, ,, Straits to America ... ... 425 ,,
,, ,, ,, Australia to America ... ... 50 ,,
,, ,, ,, Straits to Continent ... ... 900 ,,

—	During 12 months ending Mar. 31, 1894.	During 12 months ending Mar. 31, 1893.	During 12 months ending Mar. 31, 1892.	During 12 months ending Mar. 31, 1891.	During 12 months ending Mar. 31, 1890.
Shipments from Straits to London	25,885	22,932	17,388	14,269	16,667
Shipments from Straits to America	2,825	9,785	8,575	10,045	7,145
Shipments from Straits to Continent	11,416	4,780	4,925	4,755	4,110
Ditto from Straits to Europe and America ...	40,126	37,497	30,888	29,069	27,922
Shipments from Australia to London	4,514	4,304	4,405	5,070	5,548
Shipments from Australia to America... ...	300	700	800	850	800
Deliveries of Tin in London	20,431	14,090	16,704	16,631	18,442
Deliveries of Tin in London and Holland ...	27,900	22,450	24,708	24,640	26.067
Ditto in London, Holland, France, and U.S....	56,887	45,463	46,628	44,895	44,577

Banca in Trading Company's hands and afloat, 4673 tons.

PRICES: Straits and Australian, spot ... ... £82 7 6 three months ... £89 5 0
English Common Ingots ... ... 74 10 0 refined 76 10 0
Banca ... ... 74 0 0 Billiton 88 15 0

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

Caucasus Mining Company (Limited).—Registered by J. J. Ridley, 33, Old Broad Street, E.C., with a capital of £100,000 in £1 shares. Object, to adopt and carry into effect an agreement, dated, or proposed to be dated, March 28, 1894, for the purchase (from N. de Kroeber) of the lands, mines, mineral deposits, concessions, rights, privileges, ores, timber, oil wells, &c., therein referred to; to develop, turn to account, and work, in Russia, or elsewhere, land, manganese, or other mines, oil wells, forests, asbestos, sulphur, and other mineral properties; and as miners and smelters generally. There shall not be less than five nor more than eight directors; the first are to be elected by the signatories to the Memorandum of Association. Qualification, £100. Remuneration, £250 per annum, and a percentage of the profits, divisible.

Birkin Gold and Silver Extraction Company (Limited).—Registered by Waterlow Brothers and Layton (Limited), Birchin Lane, E.C., with a capital of £25,000 in £5 shares. Object, to acquire certain letters patent relating to improvements in processes and solvents for separating precious metals from their ores, and to develop and turn to account the same. The first directors—to be not less than three nor more than seven—are to be elected by the signatories to the Memorandum of Association. Qualification, 20 shares. Remuneration, £500 per annum, divisible.

New St. Augustine (Limited).—Registered March 30. Capital £500,000, in £1 shares. Objects: To acquire the undertaking of the St. Augustine Mine (Limited), to purchase, lease, or otherwise acquire, settle, improve, colonise, and cultivate lands and hereditaments in Griqualand West, South Africa, and elsewhere, and to develop the resources of the same lands and hereditaments by building, planting, clearing, mining, and otherwise dealing with the same. There shall not be less than three nor more than five directors. The first are to be appointed by the signatories to the Memorandum of Association. Qualification, £500. Remuneration as fixed by the company in general meeting.

Sulman's Float and Fine Gold Recovery Syndicate (Limited).—Registered 31st March. Capital £5000, in £1 shares. Objects: To acquire and develop an invention for the recovery of float and fine gold, and to enter into an agreement for the purpose with H. G. Sulman.

Gold Mines Promoting Syndicate (Limited).—Registered 27th March. Capital £6000, in £1 shares. Objects: To carry on the business of explorers, miners, smelters, company promoters, financiers, concessionaires, &c.

CRUDE PETROLEUM FUEL BRICKS.—The method of making fuel bricks of crude petroleum, adopted by Engineer Maestracci, of the Italian Navy, is as follows:—The bricks are of similar form and size to coal briquettes. The mixture is made in the proportion of 1 litre of petroleum, 10 per cent. of rosin, 150 grams of powdered soap, and 333 grams of caustic soda. The mixture is heated and stirred at the same time; solidification begins in about 10 minutes, and the operation must then be carefully watched. If there is a tendency to remain liquid, a little more soda is added. The mixture is stirred until the mass becomes nearly solid. The thin paste is then poured into the moulds, which are placed for 10 or 15 minutes in a drying stove. The briquettes are then cooled, and are ready for use in a few hours. Signor Maestracci recommends the addition of 20 per cent. of wood sawdust and 20 per cent. of clay or sand, which will make the briquettes cheaper and more solid. In trials made at Marseilles on several tug boats the petroleum briquettes furnished about three times as much heat as coal briquettes of the same size. They were burned in the ordinary boiler furnace, without any special preparation, and gave out very little smoke, leaving also little or no ash.—*Engineer and Iron Trades' Advertiser.*

REPORTS FROM THE MINES.

We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining captains, and others would kindly make an effort to let their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.

BRITISH MINES.

DEVON GREAT CONSOLS.—William Clemo, April 5: Watson's Engine Shaft: In the 172 fathom level east the lode continues promising, and is yielding 3 tons copper and mundic ores per fathom. The lode in the 160 fathom level east is 4 feet wide, composed of capel, quartz, and a little mundic. In the 148 fathom level east the lode is producing 3 tons of copper and mundic ores per fathom. We shall sample on Friday 310 tons copper ore for sale at Redruth on 19th inst.

DRAKEWALLS.—J. Hosking and T. Chapman, April 4: On Saturday we let the following contracts. The shaftmen to sink the engine shaft below the 175 fathom level at £33 per fathom for one month. The same to be paid £5 per month for keeping pitwork in present state of repair. They have cleaned up the bottom of the shaft and resumed sinking. The cross cut through the lode from south to north, east of the engine shaft, at £12 per fathom to two men for one month. The part of the lode driven through so far is composed of hard capel, containing a little tin, with occasional stones of mundic. From the appearances of the lode at the nearest point to the cross cut we think the lode may be found productive on the north part, still ahead of the drivage.

One stope in the back of the 175 fathom level west of the engine shaft to eight men at 5s. per ton of mundic, and 2s. per ton of tinstuff, and one stope in back of same level at 2s. 6d. per ton on tinstuff. Two stopes in the back of the 160 fathom level east of engine shaft, each to six men, one at 5s. and the other at 6s. per ton of mundic, and both at 2s. per ton of tinstuff. We have also four men repairing the engine shaft at the 90 fathom level.

LEADHILLS.—W. H. Paull, April 3: Brown's Vein: The 160 fathom level south of Jeffrey's shaft is being carried on by 10 men at 100s. per fathom, vein above 4 feet wide, of a promising character, strongly mixed with spar and a little lead ore. Now extended 8 fathoms from shaft. The 160 north of Wilson's shaft is driven 14 fathoms 3 feet 6 inches, set to seven men at 100s. per fathom, vein large, improving in character, and producing 15 cwts. of ore per fathom. Good progress is being made in both these drivages. The winze below the 145 north of Wilson's shaft, four men at 90s. per fathom, down 6 fathoms; vein here 4 feet wide, worth 20 cwts. of ore per fathom. No. 1 stope above the 145 north of Wilson's shaft, two men at 35s. per fathom, vein will yield 30 cwts. of ore per fathom. No. 2 stope above ditto north of ditto five men at 40s. per fathom, worth 35 cwts. of ore per fathom. A stope above the 130 north of Wilson's shaft, two men at 47s. 6d. per fathom, vein producing 25 cwts. of ore per fathom. The 115, to drive north of Jeffrey's shaft, two men at 105s. per fathom, now extended 119 fathoms 2 feet 8 inches, vein looks promising and contains good patches of ore. No. 1 stope over the 115, north of Jeffrey's shaft, two men at 42s. 6d. per fathom, vein worth 25 cwts. of ore per fathom. No. 2 stope over ditto north, four men to clear out on shiftwork. No. 3 stope over ditto north, five men at 37s. 6d. per fathom, vein yielding 40 cwts. of ore per fathom. The 115 is now driven 62 fathoms south of Wilson's shaft, vein soft and unproductable; temporarily suspended. The 100 south of Wilson's shaft, five men at 75s. per fathom, vein over 4 feet wide, and from indications an early improvement may be expected; now extended 123 fathoms 2 feet. The drift above the 100, south of winze, four men at 65s. per fathom, in a vein worth 50 cwts. of ore per fathom. The 100 north of Jeffrey's shaft is now extended 107 fathoms 1 foot 6 inches, suspended until the vein is further proved by the 115 below, driving in the same direction. A stope below the 100 north of Jeffrey's shaft, two men at 42s. 6d. per fathom, vein producing 20 cwts. of ore per fathom. The 85 south of Wilson's shaft on eastern portion of the vein, seven men at 77s. 6d. per fathom, now extended 5 fathoms. For the past few days this portion of the vein has considerably fallen off in produce, and now yields only a little ore, but it is deemed advisable to continue the drivage thereon for the present. No. 1 stope over the 85 south of Wilson's shaft, seven men at 35s. per fathom, vein worth 100 cwts. of ore per fathom. No. 2 stope over ditto south, two men at 27s. 6d. per fathom, vein here yields 20 cwts. of ore per fathom. No. 3 winze below the 70 south of Wilson's shaft, six men at 95s. per fathom. Now down 9 fathoms 6 feet, vein 4 feet wide, containing a good mixture of spar, but without ore. A stope above the 50 south of winze, four men at 35s. per fathom in vein worth 40 cwts. of ore per fathom. A stope below the 35 south of flat rod shaft, four men at 40s. per fathom in vein yielding 95 cwts. of ore per fathom. A stope above the 35 south of ditto, four men at 40s. per fathom, vein worth 25 cwts. of ore per fathom. Sarrowcole vein, Gripp's adit south of George's Roust vein, three men at 95s. per fathom. At this point the vein is 5 feet wide of a promising character, containing spots of lead ore; now extended 69 fathoms 5 feet.

WHEAL GRENVILLE.—April 2: Goold's engine shaft is sunk 4½ fathoms below the 232 fathom level. The 232 fathom level east of Goold's is being driven by a boring machine, and is about 50 fathoms east of the shaft. The lode is large, and producing low quality tin stuff, and not much to value. Fortescue's engine shaft is sunk 12 fathoms below the 225 fathom level. During the past fortnight several small droppers have come in from the south side, which have greatly improved the value of the lode. The lode is now worth, for the length of the shaft, £60 per fathom. There is very little change in the ends east of Fortescue's to report.—(Signed) C. F. Bishop.

WHEAL KITTY.—W. Teague, J. Dunn, C. Cole, March 28: In the 204 fathom level driving east of new shaft the lode is producing some good stones of tin. In the 194 fathom level driving east of new shaft the lode is worth for tin £6 per fathom. In the 172 fathom level driving east of new shaft the lode is worth for tin £8 per fathom. In the 60 fathom level driving east of cross cut on Joe's lode the end is letting out a quantity of water, and producing a little tin. In the 60 fathom level driving east of cross cut on the south lode we have just passed through a small cross course, the lode still has a regular wall quite in character with the old Kitty lode, and producing some splendid stone of tin. The end at present is worth £10 per fathom. We are making good progress in driving our levels, the average is about 25 fathoms every four weeks.

COLONIAL, INDIAN, AND FOREIGN MINES.

ALMADA AND TIRITO.—Fortnightly report, March 10: Dios Padre: The 350 level driving north is now in very hard porphyry, it having been found necessary to turn this drivage slightly to the west, in order to effect a speedy communication with the end coming south from the bottom of Pachecos winze. The 350 feet level driving south of Pachecos winze has a showy appearance, being spotted throughout with green ore, but of very little value. The 250 feet level driving north is without ore at present, and the lode is composed of porphyry with stringers of red clay and quartz. The 250 feet level driving south the lode is composed of very compact and hard quartz, showing occasional copper stains.—Stopes: The stope back of the 156 level north of Cruz Verde is not very productive at present, but we shall continue this for a short time as a trial stope with one pair of men. Paying quantities of ore are being broken in the back of the intermediate below the 12 fathom level.

CAPE COPPER.—Captain Henwood, February 28: Ookiep: The forebreast of the 130 fathom crosscut north of 75 winze is presenting a few specks of copper ore. The 92 fathom crosscut south of 46 winze is producing stones of copper ore, but not to value. The drive in back of 92 fathom level south east of 42 winze is yielding 6 tons of copper ore per fathom. The rock in bottom of sink below this rock is poor, consequently sinking has been suspended and the men are put to stope away the productive ground passed through in depth, to ascertain if the copper is making in any other direction. The north west end of sink is worth 7 tons of copper ore per fathom, but the south east end is in stone. The intermediate level between the 80 and 68 fathom levels is worth fully 6 tons of copper ore per fathom. The ground in 80 fathom level north east of 49 winze is composed of quartz, iron, and copper ore the latter not to value. The 80 fathom level south east of the new shaft is chiefly gneiss. The winze sinking below the 68 fathom crosscut south east of No. 16 level is worth 5 tons of copper ore per fathom, and the stope in the back of this crosscut is yielding 8 tons per fathom. The stopes throughout the mine are yielding well.—Captain Henwood, February 28: Trial Mines: Nababeep South: The rock in bottom of shaft sinking below the 59 fathom level is disseminated with fine specks of copper ore throughout.—Spectakel: The drive in the 36 fathom level south east of new shaft is yielding fully 2 tons of copper ore per fathom.—Copperberg: The ground in bottom of winze sinking below the east drive at the adit level is yielding occasional tones of copper ore.—Returns for February: Ookiep, 2200 tons of 13 per cent.; Spectakel, 150 tons of 29 per cent.—Arrival at Swansea: The *Daniel*, with 1230 tons of ore and 1340 tons of regulus.—Arrival at Port Nolloth: The *Ranmoor*.—Tilt Cove: East Mine: Captain W. R. Toms: Outpnt for January; 5544 tons of 4 per cent. wet assay.

CARRINGTON.—Referring to the Victoria underlie, the manager writes under date February 10: I have no intention of getting pieces of ore assayed. We were deceived before on assay, and the best thing to do is to put a trial crushing through of 10 or 15 tons. If the stone then goes better than before, we know that we are approaching the shoot of gold. The first crushing went 4 dwts. and the second 10 dwts., so that it looks as if we were on the right track. We have now a good sized solid reef, and if it goes even an ounce to the ton it will pay our expenses in prospecting the ground. Since the date of this letter a cable has been received giving the value of the ore from this underlie 32 dwts. per ton, so the outlook is considered most encouraging.

DE LAMAR.—Copy of Captain J. W. Plummer's monthly report for February:—Mining: Ore Breaking Department: Wilson vein above the third level, average width of vein 3 feet 6 inches, assaying n gold $21·05 and $1 in silver, equals $22·05 per ton. 77 feet vein above the fifth level west, average width of vein 3 feet, assaying $18·02 in gold and $1 in silver, equals $19·02 per ton. 77 feet vein above the sixth level west, average width of productive portion of vein 6 feet 6 inches, assaying $13 in gold and $15·08 in silver, equals $28·08 per ton. 77 feet vein above the seventh level west, average width of productive portion of vein 9 feet 6 inches, assaying $15·27 in gold and $10·76 in silver, equals $26·03 per ton. 77 feet vein above the eighth level, average width of vein 5 feet, assaying $5·79 in gold and $21·37 in silver, equals $27·16 per ton. No. 5 vein above the sixth level, average width of vein 6 feet 9 inches, assaying in gold $24·84 and $1·93 in silver equals, $26·77 per ton. No. 5 vein above the eighth level, average width of vein 5 feet 6 inches, assaying $25·76 in gold and $6·69 in silver, equals $32·45 per ton. No. 5 vein above the ninth level, average width of vein 4 feet, assaying $24·28 in gold and $4·15 in silver, equals $98·43 per ton. No. 6 vein above the ninth level, average width of vein 2 feet 6 inches, assaying $35·64 in gold and $9·57 in silver, equals $45·21 per ton. No. 7 vein above the seventh level, average width of vein 6 feet 6 inches, assaying $28·72 in gold and $2·45 in silver, equals $31·17 per ton. No. 7 vein above the eighth level, average width of the vein is 2 feet 6 inches, assaying $22·29 in gold and $1·69 in silver, equals $23·98 per ton. No. 7 vein above the ninth level, average width of vein 3 feet 6 inches, assaying $28·51 in gold, $6·66 silver, equals $35·17 per ton. No. 9 vein above the seventh level, average width of vein 5 feet 9 inches, assaying $16·90 in gold and $9 in silver, equals $25·90 per ton. This vein has joined the No. 7 at 35 feet above the seventh level. No. 9 vein above the eighth level, average width of vein 7 feet, assaying $20·62 in gold and $9·03 in silver, equals $29·65 per ton. No. 9 vein above the ninth level, average width of vein 3 feet 3 inches, assaying $26·40 in gold and $9·21 in silver, equals $35 61 per ton.—Miscellaneous Work: 77 feet vein, hanging wall section, below the eighth level, average width of vein is 5 feet, assaying £20 in gold and $12·53, equals $32·53 per ton.—Prospecting department: 77 feet vein eighth level west advanced for the month 37 feet 9 inches. The portion of vein carried is 4 feet in width, assaying in gold $5·86 and $21·42 in silver, equals $27·28 per ton. 77 feet vein ninth level east cross cut, this has been run 30 feet 3 inches towards the footwall, and assays $14·35 in gold and $2·20 in silver, equals $16·55 per ton. No. 5 vein sixth level hanging wall drift, advanced for the month 46 feet 3 inches, average width of the vein 5 feet, assaying $35·70 in gold and $8·71 silver, equals $44·41 per ton. No. 7 vein ninth level west advanced for the month 11 feet 3 inches. The average width of the vein is 2 feet 3 inches wide, and its average assay value $20·83 in gold and $3·69 in silver, equals $24·52 per ton. No. 8 vein eighth level east, this has been driven a total length of 30 feet 6 inches. The vein is 1 foot wide, assaying $42 08 in gold, $14·69 in silver, equals $56·77 per ton. No. 9 vein, seventh level, west, advanced for the month 28 feet 3 inches. Average width of the vein, 8 feet 3 inches, assaying $24·40 in gold and $1·89 in silver, equals $26·29 per ton. No. 9 vein, eighth level west, advanced during the month 16 feet 6 inches. Average width, 1 foot 6 inches, assaying $23 95 in gold and $1·36 in silver, equals $25·31 per ton. No. 9 vein, ninth level east, advanced during the month 21 feet. Average width, 2 feet 10 inches, assaying $20 in gold and $4·32 in silver, equals $24·32 per ton. No. 9 vein, ninth level west, advanced during the month 13 feet. Average width, 3 feet 3 inches, assaying $18·01 in gold and $4·68 in silver, equals $22·69 per ton.—Cross-cut tunnel, tenth level: This has been advanced 32 feet to the south and 7 feet north. Seventh level: The raise on the seventh level east on the dyke and porphyry contact is now 87 feet high. The seventh level east on the contact has been advanced 11 feet 3 inches.—Milling department: The milling operations for the month have been of the usual description, the only stoppage being 10 hours for the customary clean-up.—Table of work performed for February, 1894: No. of wet tons crushed, 3166; ditto, dry, 2844.65. Assay value of the pulp: Gold 1·06 ounces, silver 11·43 ounces. Assay value of the tailings—Gold ·182 ounces, silver 1·39 ounces. Total percentage saved—84·21 per cent.; gold 82·91 per cent., silver 87·83 per cent. Number of Doré bars produced 25; number of ounces pure gold produced 2310·033; number of ounces fine silver produced 38,490 22. Value of gold produced $46,200 67, value of silver produced $23,840·34=$70,041·01. Miscellaneous revenue $297·39, ore shipped during the month $12,000=$82,338·40; deduct costs and expenses for the month $36,197·77; estimated profit for month (or at $490 to £ sterling, £9416), $46,140·63. Surface work: Nothing has been done on the surface but the usual routine work, the heavy snows preventing. The weather has been exceedingly variable the past few days, and indications appear to favour an early break up.—Note by London office: This report, received to-day, has been delayed in transmission owing to severe storms and floods, causing a stoppage of railway communication.

LA PLATA.—The following news has been received from Mr. Niness, agent of the Gold Fields of Mozambique (Limited), dated Massi Kesse, February 6:—Lion Mine: Nothing has occured in the work I have done on this property to change my views in reference to the proximity of the rich reef, but on the contrary I beg to confirm all that I have previously reported as to its value.—The Rettencourt: There is an exceedingly rich shoot of ore in this reef which I am driving for from one of the drives made by the late proprietors.—New alluvial claims: I have had some very rich pannings from the shafts I am putting down, the gold from which is rough, and can be easily caught in sluice boxes.

LISBON-BERLYN.—Under dates February 28 and March 6, the manager writes:—Sutherland Hill: Continuation of Bevitt's Reef: I have stopped all the levels, except No. 8, to cut down our expenses. We shall now stope only. All levels are well advanced for two or three years. No change in thickness of reef or assay value since the beginning of the month. Theta Reef: This is a point of the greatest importance. The assays show that it is of a much better quality than Sutherland Hill. The present appearance and extent is certainly encouraging. We have at the present moment a face stripped about 300 yards long, going towards the new mill. I am having it opened with about 40 natives and two white men, and it runs at present from 2 to 3 feet thick. Two drives we begun to-day. I have decided to have two wires put up to convey it straight from the reef to the ore bin. It is about 120 yards distant that is all. List of assays of Theta: No. 1, 2 ounces 19 dwts. gold; No. 2, 1 ounce 17 dwts. gold; No. 3, 1 ounce 8 dwts. gold; No. 4, 1 ounce 12 dwts. gold; No. 5, 2 ounces 14 dwts. gold; No. 6, 1 ounce 16 dwts. gold; total, 12 ounces 6 dwts.; average, 2 ounces 1 dwt. On March 26 he cables:—I am at present milling ore from Sutherland Hill; I am at present milling ore from Theta. And on April 3: Frecheville (Messrs. R. J. and W. Frecheville) has examined all mining works. Everything gives the greatest satisfaction.

MACATE.—The directors have just received the following information from the mine manager:—The general appearance in La Escocia shows a slight improvement. In San Pedro there is also a change for the better. The improvement, however is more marked in San Enrique, the lode in the first level being at present 30 inches wide, and of fair quality. The improvement shown in the San Enrique is considered particularly interesting, as this mine was secured by the company on March 5. The directors consider this news highly encouraging.

NEW CRŒSUS.—The manager reports that during the week a reef has been met in the vertical shaft. Though the reef in question is somewhat out of its average course I cannot help thinking from its appearance that it must be the main reef. Its width at the present point of intersection is 4 feet without any sign of the footwall. The reef is well defined with the leader apparently in the body of the reef, in place of in the hanging wall. A sample assayed by the African Banking Corporation gave the following result:—Fire assay, 2 ounces 8 dwts.; milling assay, 1 ounce 11 dwts 8 grains. The development of the mine for the month of February was 206 feet, and for the first week in March 52 feet were driven and sunk. The new rock drill plant has been erected, and is giving every satisfaction. Mr. Hammond, the consulting engineer, states that the progress in development is very favourable. An assay plant has arrived, and is now in course of erection. Everything will then be in readiness for the continued sampling of the mine, the result of which will be at once made known.

NEW HERIOT.—Operations at the mine: The manager says: During the week ending 26th February, 1894, 131 feet of driving, sinking, and crosscutting were done,—Main shaft third level: The ore bin is now completed and ready for use. We have commenced driving main crosscut further in order to ascertain the nature of ground and prove if more reef matter exists than what I have already reported. We have also recommenced driving east and west on the 54 inch reef as reported in my weekly report of January 15.—First level: The No. 2 south reef west drive 1100 feet from main crosscut has become reduced in thickness and value during the last two or three weeks. It is now 3 inches thick, 30 dwts. in value. I am hoping that it may improve as we continue driving. From No. 2 south reef 950 feet from main crosscut we have driven a crosscut north 26 feet and intersected the following reef matter: 6 feet from No. 2 south reef we have cut a reef 18 inches wide, value 10 dwts. Intervening sandstone 42 inches, reef 4 inches, value 2 dwts.; 18 inches, reef 24 inches, value 6 dwts.; 24 inches, reef 6 inches, value 3·6 dwts.; 6 inches, reef 12 inches, value 5 dwts.; 20 inches, reef 5 inches, value 12·5 dwts. The reefs seem to be split up at this point, and we shall undoubtedly find when driving that they will come closer together, and we shall be able to exploit two reefs from one drive.—Western shaft: We commenced pumping on the 23rd inst., and hope to have the water out in two or three days.—Battery: The 40 stamps mill ran 6 days 21 hours and crushed 1059 tons, yielding 1581 ounces of clean amalgam and 498·86 ounces of smelted gold.—Cyanide works: Tons treated during week, 688; average value of charge, 6·175 dwts; residues, 1·45 dwts.; theoretical extraction, 76·136 per cent.

NEW VIRGINIA.—The manager, writing under date February 17, mentions: So far as ore in quantity and quality such as we have been breaking and milling in the past is concerned, I could easily keep a 20 stamp mill running full time for the next year, by which time some more stamps can be added. This is not a hard ground mine, it is practically soft, and whether it be a case of sinking or driving to open up ore for stoping, it can be accomplished in quarter the time it takes to do the same work in a hard ground mine, but apart from any sinking or driving there is some thousands of tons broken and well laid open, shaft sunk, and the necessary levels partly driven. The new trial shaft is over 63 feet in depth, with a reef from 5 feet to 6 feet wide, all good ore, which the last crushing showed, being an improvement on the previous ones. Again on the 2nd March the manager writes:—Hodge's winze: I anticipate no difficulty in having this and every other point put in order in a very short time after we commence operations, and from which hundreds of tons of good ore will be extracted monthly. The sinking of Curtis shaft will be pushed on for at least 100 feet deeper, and where according to the look of the reef in the 80 feet level, cannot fail, in my opinion to be richer and much more productive at the lower depth, which will be about 180 feet from the surface, and 100 feet below the 80 feet level. No. 1 adit level has been timbered the whole distance of 666 feet, and is now in good order. This adit level will do away with the hauling of the ore and debris, and also the pumping of the water up the Curtis shaft, as we had to do previously, but in future our debris and water will be brought through this adit. We have a good tram-road laid down from the end inside the mine right to the mill. The ore will be tipped right into the hurry in front of the stamps. This means a very considerable saving on the old method of getting the ore to the mill by ox-waggon and being often unable to bring up supplies owing to the state of the roads. I consider this adit level a piece of good and substantial work, and will be a means of saving about 1s. 9d. to 2s. per ton alone in the transport of the ore to the mill. Upon the Gold Enough Claims, recently acquired, the following work has been done. An adit level has been driven about 20 feet on the course of the reef, from 2 feet to 3 feet wide, in places 4 feet to 5 feet wide, panning from 2 dwts. to 4 dwts. The Trial Shaft, 28 feet deep on the same reef about 3 feet wide, pannings 4 to 6 dwts., a little disordered in the bottom, but is strong and still yields gold. I anticipate it is only a poor patch in the reef, and any few feet ahead deeper will cut out and see the reef just as good as before. A series of six branch pits, averaging depths from 10 to 12 feet, show great width and strong. One pit has been panning remarkably well 8 to 10 dwts., and showing visible freely. I expect further operations here will reveal a rich reef or leader. An adit level has been put in at a point to gain depth every foot it is driven, and will yield milling ore and so pay its way for driving, will undoubtedly lay open considerable quantities of average ore in the roof or back of the same, which can be stoped by miners at a very low figure per ton, so that you will perceive that we have under hand a lot of ore practically ready to be broken away to supply the mill. Future operations will greatly increase and open up reserve ore to be stoped out as we require the same.

NEW QUEEN.—The following is an abstract from the manager's letter, dated Charters Towers, February 19, regarding the new or lowest formation: No. 4 formation: Since the mine manager's report was written for the past fortnight, we have connected the No. 1 level from the shaft, with the stopes above the No. 2 level, consequently the ventilation is much improved, and we hope to push ahead the work here now very rapidly. The clean-up from this formation for the past fortnight, we consider, is very satisfactory, taking into consideration the fact that the trial crushing from the bottom of the shaft when the reef was struck, gave a very low return, and in the crushing this fortnight, there was a lot of stone taken from near the shaft, so that there must be very good stone mixed with it from other parts to bring the yield up to nearly 25 dwts. per ton. Taking everything into consideration the mine looks very promising at present.

NO. 7 NORTH EAST QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers, February 16:—Since my last report Perry and party have crushed 14 tons 14 cwts., 31 ounces 18 dwts. 6 grains of gold. At present they are working on from 6 to 10 inches of good mineral stone under No. 3 east level. Goninon and party in the stulls over the same level are getting a fair amount of crushing stuff. Hall and party under No. 1 west level have from 4 to 6 inches of stone in the face. They are crushing at present. Total amount of stone raised during the fortnight, 34 tons.—(Signed) H. Davis.

OSCAR.—The following report has been received from the mine, dated Haugesund, March 31: Hodgkinson's Lode: After the Easter holidays the men got to work again on Wednesday morning. As we are so short handed, I have been obliged to take the miners to help with trammings, filling wagons to mill, and to feed and take under stone-breaker. You will understand, therefore, that of actual mining very little has been done. I have managed to keep the 500 and 200 going. The lode in the 500 has pinched to about 6 inches in width. In the 200 there is a capital run of quartz, averaging 10 inches in width, which carries galena and has visible gold. I am of opinion that if we can get the 500 into shoot, and the 200 through, we shall be in fairly smooth waters again. We have run the mill three days only this week. There is gold on the plates, and I am allowing for that with such fine screens. We must find more than the usual amount of gold inside when cleaning up.

ST. JOHN DEL REY.—In connection with the mining work for the month of February, Mr. Chalmers reports that No. 2 winze from the timber level was sunk 27 feet in mixed mineral, and that the tram level, 120 feet lower down, was extended 19 feet in the direction of the winze, and is now about 20 feet distant from the spot that the winze will meet when sunk the required depth. The mineral quarried from the tram level during the month has been of splendid quality, and free from mixed mineral in the stope, which has been opened out 16 feet in width; 61 feet of the adit have been bricked and arched; this work is now nearly completed. All the machinery and plant has now been sent up the country, and is arriving at the mines. The gold remittance for 24 days is approximately £2100.

ALAMILLOS.—Mine report dated March 28: In the 160 fathom level driving west of Taylor's engine shaft the lode produces stones of lead. The 100 west of Judd's engine shaft is opening up good stoping ground, and is worth 2 tons per fathom. The lode in the 100 east of the same shaft is not quite so good as last reported, and is now valued at ⅔ ton per fathom. Isidoro's winze sinking below the 70 fathom level the lode is wide and contains stones of ore.

AUSTRALASIAN.—Fortnightly report of Mr. John James, manager, dated February 15: In the underhand stope going north on the Orient reef there is no change. The crushing stuff keeps about the same and shows a little gold. The stopes over the level going south show a little gold, and the crushing stuff is about the same as last reported on.—690 feet level: There is a good body of crushing in the stopes here; they show a little gold, but not as much as would be expected, as the country is good. There are 40 men employed, 30 on the mine, and 10 at the battery. The winding engine and battery are in good working order. The battery is crushing as usual.

CHIAPAS.—Mine report for fortnight ended February 28: Providencia No. 2 west rise risen 12 feet 6 inches, total 33 feet 9 inches. All in ore, improving as we rise in gold. Assay 8 to 9 dwts. in gold, 17 to 21 ounces in silver, 9 per cent. copper. Providencia No. 3 west drift, 9 feet 10 inches driven. New drift some 60 feet south of No. 2 west drift, driving to cut same body of ore we have in No. 2 west rise. Santa Fe drift driven 4 feet 11½ inches, total 32 feet 10 inches. Assays 14 to 15 dwts. gold, 7 to 14 ounces silver, 3·3 to 5·4 per cent. copper. 12 to 15 feet wide in breast. By assay ore runs much higher than its appearance warrants. Extracted 45 tons ore, mostly very white looking, so that ore in stone, which is much mixed, must be of high grade in itself. Santa Fe stope, extracted 161 tons. Assays 12 to 16 dwts. gold, 5¾ to 6¾ ounces silver, 2·5 to 3·8 per cent. copper. Fairly good stone. Taylor No. 3 winze, 4 feet 5 inches, total 26 feet 5 inches; in very hard short breaking ground. Taylor main drift west No. 2, 9 feet 10 inches, total 63 feet 10 inches. Ground changing from compact to cavernous stone, *i.e.*, full of vugs. Santa Fe winze No. 2 sunk 3 feet 2 inches, total 45 feet 10 inches. No change, suspended until new suction hose arrives; old completely worn out. Taylor No. 3 stope extracted 305 tons average stone, assaying 10 to 16 dwts. gold, 5 to 7 ounces silver, 2·4 to 3·6 per cent. copper. In south east corner of stope looking well. Taylor north west branch (in former report wrongly described as south west) extracted 7 tons of low grade, assaying 8 dwts. gold, 5 to 6 ounces silver, 2·4 to 2·8 per cent copper. Providencia No. 4 west rise extracted 38 tons. High in silver and copper, and improving in gold as we go up. Old Providencia, drawn on old pile, 70 tons.—Note: Influenza has caused us much delay this month.—(Signed) Edward T. McCarthy.

CRAVEN'S CALEDONIA.—The following fortnightly report has been received from the mine, dated Charters Towers, February 15: During the past fortnight No. 9 level has been extended a further distance of 9 feet by three men on wages, total from slide 170 feet. The reef in this level is about 9 inches thick; in No. 1 stope the reef is abont 7 inches, but in the other four it is about 10 inches. No. 8 level has been extended a further distance of 6 feet by two contractors, total from slide 289 feet. The reef in this level is about 8 inches thick; in Nos. 1 and 2 stopes there is 1 foot of very good looking stone; in Nos. 3, 4, and 5 about 8 inches. In the stopes over No. 7 level the reef averages about 6 inches. No. 6 level has been extended a further distance of 10 feet, making a total of 319 feet from this slide; the reef is 9 inches. The reef in the stope over this level is about 9 inches also. The winze in No. 4 level has been sunk 13 feet, making a total from the level of 23 feet; there are still a few leaders running through the formation. The haulage of quartz for the fortnight is 129 tons, total in paddock 264 tons. I believe there is an improvement in the stone. A little repairing has been done in the underlie.—(Signed) G. Cabassi.

CHAMPION REEF.—Fortnightly report of Captain James Rowe, superintendent, dated March 12: No sinking has been done in Dalyell's shaft during the past fortnight owing to water. We are now engaged fixing a pump in this shaft to keep the water under. The rise in the back of the 620 north risen 26 feet 3 inches, total height 56 feet 3 inches. Lode 6 feet wide, assaying 1 ounce 15 dwts. of gold per ton. The winze below the 620 north sunk 9 feet 9 inches, total depth 40 feet 6 inches. Lode pinched to about 6 inches wide, assaying 19 dwts. 10 grains of gold per ton. This is suspended for a time owing to water. Garland's shaft has been sunk in the dyke 3 feet 9 inches, total depth 641 feet 3 inches. We have suspended the sinking for a time, and are now engaged driving cross cut west through the dyke. Cross cut has been driven 13 feet; end in the dyke, but showing strong indications of our being nearly through it. The 530 feet level north of west cross cut has been driven 31 feet 9 inches, total length 287 feet. Lode 5 feet wide, assaying 2 ounces of gold per ton. New rise (No. 2) in back of level, distant about 163 feet north of No. 1 rise, risen 13 feet, total height 13 feet. Lode 5 feet wide, assaying 2 ounces 4 dwts. 9 grains of gold per ton. New rise in back of 530 south of cross cut, near the dyke, risen 27 feet 6 inches. Lode 2 feet wide, assaying 1 ounce 14 dwts. 19 grains of gold per ton. The 440 feet level north of west cross cut driven 27 feet 9 inches, total length 293 feet 6 inches. Lode 2 feet wide, assaying 1 ounce 15 dwts. 21 grains of gold per ton. No. 2 winze below level sunk 8 feet 9 inches, total depth 28 feet 3 inches. Lode 3 feet wide, assaying 2 ounces 10 dwts. of gold per ton. 440 south of west cross cut driven 6 feet, total length 80 feet 6 inches. This having met with the dyke is suspended. New rise in back of level near the dyke risen 11 feet 3 inches, total height 11 feet 3 inches. Lode 4 feet wide, assaying 1 ounce 3 dwts. 13 grains of gold per ton. 340 feet level north of west cross cut driven 23 feet 9 inches, total length 705 feet 7 inches. Having passed the winze sunk in bottom of 240 south of Ribblesdale's shaft, and finding we are on another part of the lode, we are now cross cutting west to communicate with the winze. Cross cut has been driven 3 feet 9 inches. No. 2 or incline winze below 340 north sunk 8 feet, total depth 25 feet 6 inches. Lode 2 feet wide, assaying 2 ounces 9 dwts. 6 grains of gold per ton. 240 feet level north of west cross cut has been driven 18 feet 6 inches, total length 363 feet 6 inches. Lode 2 feet wide, assaying 2 ounces 5 dwts. of gold per ton. No. 2 rise in back of level risen 6 feet, total height 57 feet. Having met with the top part of the shoot we are now rising on slope of shoot. Rise has been put up 11 feet, total 11 feet. Lode 3 feet wide, assaying 2 ounces 13 dwts. of gold per ton.—Ribblesdale's shaft: This has been sunk 8 feet, total depth 467 feet 6 inches. Lode pinched to a mere stringer of quartz. 340 feet level south has been driven 22 feet 6 inches, total length 520 feet 11 inches. Lode 2 feet wide, assaying 2 ounces of gold per ton. Winze below 340 feet level north on south part of fold has been sunk 23 feet 9 inches, total depth 87 feet. Lode 4 feet wide, assaying 1 ounce 13 dwts. 14 grains of gold per ton. No. 1 rise in back of 240 south of shaft risen 4 feet 6 inches, total height from 200 level 6 feet 6 inches. Lode 2½ feet wide, assaying 1 ounce 4 dwts. 20 grains of gold per ton. 200 feet level north of rise driven 21 feet 6 inches, total length 38 feet 6 inches. Lode 4 feet wide, assaying 1 ounce 10 dwts. of gold per ton. 200 feet level south of No. 1 rise in back of 240 north has been driven 11 fathoms 6 inches, total length 131 feet. Lode 2 feet wide, assaying 1 ounce 11 dwts. 16 grains of gold per ton. At Carmichael's shaft the 315 feet level north has been driven 23 feet 3 inches, total length 509 feet 6 inches. End in the east and west dyke. Rise in back of 315 south of crosscut west of shaft to communicate with vertical shaft has been put up 8 feet 3 inches, total height 57 feet 9 inches. Rowe's shaft has been sunk 11 feet, total depth below the 225 feet level 103 feet. Lode 1 foot 6 inches wide, assaying 3 ounces 2 dwts. 6 grains of gold per ton. Having met with water at the new well we have suspended the sinking.—Stopes: Dalyell's shaft: Stope in back of 530 north of south rise cut 1 fathom 9 inches. This is suspended. Stope south of rise cut 7 fathoms 4 feet 6 inches. Lode 3 feet wide, assaying 1 ounce 11 dwts. 12 grains of gold per ton. Stope in back of 530 north, south of rise, cut 5 fathoms 3 feet 3 inches. Lode 2 feet wide, assaying 12 dwts. 20 grains of gold per ton. Stope in bottom of 390 south, north of 440 south rise, cut 7 fathoms 3 feet. Lode 2 feet wide, assaying 1 ounce 7 dwts. 5 grains of gold per ton. Stope south of rise cut 13 fathoms 4 feet 6 inches. Lode 1 foot 3 inches wide, assaying 1 ounce 10 dwts. of gold per ton. Stope in bottom of 390 south, south of south winze, cut 2 fathoms 3 feet 6 inches. No sample taken.—Garland's shaft: Stope in back of 530 north of west crosscut, south of rise, cut 4 fathoms 3 inches. Lode 2½ feet wide, assaying 1 ounce 17 dwts. 14 grains of gold per ton. New stope north of rise cut 1 fathom 3 feet 6 inches. Lode 2½ feet wide, assaying 2 ounces 11 dwts. 16 grains of gold per ton. New stope in back of 530 south of west crosscut, south of rise, cut 2 fathoms 9 inches. No sample taken. New stope in back of 440 north of west crosscut, north of rise cut 5 fathoms 6 inches. Lode 5 feet wide, assaying 1 ounce 18 dwts. of gold per ton. Stope in back of 340 north of west crosscut, south of No. 2 rise cut 1 fathom 4 feet 5 inches. This is suspended for a time. Stope in bottom of 240 south of west crosscut cut 10 fathoms 4 feet 9 inches. This is suspended for a time. Stope in back of level cut 3 fathoms 2 feet. Lode 2 feet wide, assaying 1 ounce 19 dwts. of gold per ton. Stope in back of 240 north of west crosscut, south of No. 1 rise cut 4 fathoms 6 inches. Lode 2½ feet wide, assaying 1 ounce 16 dwts. 9 grains of gold per ton. New stope in back of level south of No. 2 rise cut 2 fathoms 4 feet 9 inches. Lode 2½ feet wide, assaying 2 ounces 5 dwts. of gold per ton.—Ribblesdale's shaft: New stope in back of 340 north, south of No. 2 rise cut 8 fathoms 2 feet 3 inches. Lode 3 feet wide, assaying 2 ounces of gold per ton. Stope in bottom of 240 north, north of winze cut 17 fathoms 1 foot. Lode 4 feet wide, assaying 1 ounce 18 dwts. of gold per ton. Stope south of winze cut 4 fathoms 1 foot. Lode 3 feet wide, assaying 2 ounces 10 dwts. of gold per ton. Stope in bottom of 200 north of north rise cut 4 fathoms 1 foot 10 inches. Lode 2 feet wide, assaying 1 ounce 10 dwts. of gold per ton. Stope south of rise cut 5 fathoms 5 feet 7 inches. Lode 2½ feet wide assaying 1 ounce 18 dwts. of gold per ton. New stope in bottom of 200 north of 240 south rise cut 9 fathoms 4 feet 8 inches. Lode 1 foot 6 inches wide, assaying 2 ounces 14 dwts. 4 grains of gold per ton. Stope in back of 240 south, south of No. 1 rise cut 2 fathoms 4 feet 6 inches. Lode 2½ feet wide, assaying 1 ounce 18 dwts. of gold per ton. Stope in back of 240 south, north of No. 2 rise, cut 16 fathoms 10 inches. Lode 3 feet wide, assaying 12 dwts. of gold per ton. This is suspended for a time. New stope in back of 200 north of No. 2 south rise above 240 south cut 1 fathom 2 feet 5 inches. Lode 6 feet wide, assaying 1 ounce 10 dwts. of gold per ton. The above stoping is for February month.—Returns: During the month of February 2070 tons of quartz were stamped, which produced 3044 ounces of gold, an average yield of 1 ounce 9 dwts. 9¾ grains per ton. Partial run of tailings machinery for the month produced 55 ounces. Total yield for the month 3099 ounces of gold.—New Compressor: We are busily engaged fixing this machinery. Have almost completed the fixing of the engine.—New Mill: We are hastening on with this. Have the pile timbers for 40 heads fixed, and the standards for 20 heads in position.—Health: The health of the employees is fairly good.

DAY DAWN BLOCK AND WYNDHAM.—Mine manager's report for fortnight ending February 10: No. 2 (underlie) shaft: This shaft has been sunk 4 feet on day work and 8 feet on contract. Total depth of underlie 1897 feet. The formation is 4 feet in thickness, carrying bunches of quartz.—No. 13 level west: No work has been done during the past fortnight.—No. 13 level east: A cross cut was put in at about 85 feet from the shaft, to try and discover the main footwall. A vein of quartz about 10 inches in thickness of poor quality was intersected. A second cross cut is being put in at about 90 feet from the boundary and 175 feet from the shaft. It has intersected a strong reef carrying heavy mineral, but so far it has only penetrated about 2 feet.—No. 12 level west: There has been no work done in this level for the past fortnight.—No. 11 level west: This level has been driven 12 feet. Total distance from shaft 183 feet. The reef extends the whole width of the drive, but is of poor quality.—No. 10 level west: This level has been driven 10 feet. Total distance from shaft 261 feet. About 3 feet of stone is being carried with about 2 feet of diorite. No. 2 winze has been sunk 4 feet, total depth 90 feet.—No. 3 shaft: The underlie has been sunk 9 feet, total depth 657 feet. The ground is somewhat harder.

EAGLEHAWK CONSOLIDATED.—The following is an abstract of the mine manager's report dated Maldon, February 17: During the fortnight the contractors for sinking the limited shaft have sunk a further distance of 26 feet, making the shaft 96 feet below the plat and 822 feet from the surface. The ground in the shaft is hard clean bluestone, hard to drill, but breaks well in blasting. In the fortnight we have laid the pipes on to feed the boiler at the new engine from the Alliance shaft. The tributers, Smith and party, have a little gold but poor. Harris and party have a little gold in the reef; it is so scattered in the stone it is barely payable. Sampson has nothing payable yet.—(Signed) Thomas Hodge.

FORTUNA.—Mine report dated March 28: Canada Incosa Mine: In the 150 fathom level driving west of O'Shea's engine shaft the lode is small and unproductive. The lode in the 110 west of San Pedro's shaft is strong and contains some stones of ore, worth ½ ton per fathom.—Los Salidos Mine: The 200 east of Taylor's engine shaft continues to lay open good stoping ground, and is worth 2 tons per fathom. The lode in the 105 east of Palgrave's shaft is poor. Cordova's winze below the 188 fathom level worth 2 tons per fathom, is going down in a strong and productive lode.

GOLD FIELDS OF MYSORE.—Fortnightly report of Captain James Rowe, mine agent, dated 14th March: Oriental Lode: South Shaft: The 470 feet level north has been driven 2 feet 6 inches, total length 70 feet 6 inches. Lode split up into stringers of quartz, assaying 18 dwts. 20 grains of gold per ton. 470 feet level south driven 4 feet 6 inches, total length 67 feet 6 inches. Lode 1 foot wide, assaying 1 ounce 9 dwts. 16 grains of gold per ton. The 380 feet level north has been driven 2 feet 9 inches, total length 178 feet 1 inch. Lode 1 foot wide, assaying 1 ounce 12 dwts. 7 grains of gold per ton. 380 feet level south driven 4 feet, total length 154 feet 9 inches. Lode 2½ feet wide, assaying 1 ounce 5 dwts. 6 grains of gold per ton. The 280 cross cut east of shaft has been driven 3 feet, total length 211 feet. There is no change in the strata as yet which is composed of a hard schist and spare for driving by hand labour.—Prospecting work: This is being push ahead, and some of the deeper developments on the lode worked upon are of a very promising description as will be seen by Captain Williams report sent by this mail.

GUADALUPE (Honduras).—Report of work, January 23: The mill was stopped on 30th December, and the amalgamation pans on Wednesday, January 4th, running through for 13 days' work 26 tons at 26 ounces per ton. We were obliged to stop for want of sufficient water. The two new tanks serving as catch pits to the mill have been built. In order to obtain the necessary room for these tanks we were obliged to remove our amalgam retort further out of the mill, and at present masons and labourers are employed building a small room on one side of the amalgamation plant to place the retort. This room will also be used as a mill storehouse for quicksilver, salt, and copper.—Mine Workings: In my last report I stated that the mine was at that time better than I had ever before seen it. Since then there has been a great improvement in every part of the mine, and up to date it has the same appearance all through. In the new crosscut east four miners, on contract at $7 a yard, have driven 49 feet 6 inches, making a total length of crosscut 106 feet 6 inches. This crosscut was resumed after Mr. Waterfield's leaving, and I consider it to be the most important work in the whole mine.—La Fortuna crosscut: The eastern end in this crosscut is being carried on with all possible speed. Here I have two miners working on contract at $15 a yard; the lode is very hard, and has a branch of high grade milling ore running across the end. This branch widens as it runs in depth; 8 feet 8 inches has been driven, making a total length of 59 feet.—Topa Caliente: Whilst the miners were stoping in the winze communicating Nos. 1 and 2 shafts, they cut a branch of export ore about 1 foot wide, giving an assay of 345 ounces to the ton. I have four men cleaning this metal, and have in readiness for shipment 3 tons. During the last week the branch has become smaller, but has not lost its richness. Besides this export ore we are getting out some tons of first-class milling ore. At the bottom of winze in level east of main tramway cross cut two miners have been working to communicate to our deepest cross cut west, driven by Mr. Guilbert; here a branch of high grade milling ore can be traced for the whole depth of winze, which has been sunk 61 feet. In to-day's blasting the branch has opened wider and the metal has a better appearance. The level west of the main tramway cross cut has been driven on the hanging wall, consequently the whole of the lode is standing to the north. Whilst making an inspection in these works I discovered a branch of ore about an inch in width. Here a miner has been blasting, so that I may further examine the lode better. This branch is the same class, and I believe it to be the same branch as we have in Topa Caliente.—Bullion and Ore on Hand: Bullion, 100 lbs. weight, 1200 ounces; export ore, 3 tons at 345 ounces, 1035 ounces; total, 2235 ounces. Milling ore about 22 tons. Cleanings from the export in Topa Caliente and vein in La Fortuna. No assay has yet been taken, but it appears to give about 30 ounces to the ton.

KEMPINKOTE.—Superintendent's report for fortnight ending March 13: Garland's shaft has been sunk 7 feet 6 inches, making a total depth of 136 feet 9 inches. On the evening of the 9th inst. we cut a large stream of water, which was more than our pump could contend with, and for two days very little work was done, but I am pleased to say that the water has abated, and we have been able to resume sinking. The shaft has been timbered down to within 8 feet from the bottom. Henty's shaft has sunk 8 feet, making a total depth of 169 feet. There is no change to report.—Prospecting: In the north drive from No. 4 pit we have come to what seems to be the end of the old workings in this direction, and work has been suspended. We have opened up a run of about 80 feet. The east cross cut from No. 5 pit has been extended 20 feet, making a total of 53 feet 6 inches. We have cut the old workings and have driven 12 feet north on the course of the lode.

LINARES LEAD.—Mine report dated March 28: Pozo Ancho Mine: The 200 fathom level driving west of Peill's engine shaft is opening up good stoping ground, worth 3 tons per fathom. The lode in the 155 west of the same shaft is small, with a few spots of ore. In the 178 west of Warne's cross cut the lode is large and strong, but it does not contain ore enough to value. No. 275 winze below the 135 fathom level is now down to the 155 fathom level.—Los Quinientos Mine: Taylor's engine shaft: The 185 fathom level driving south the men are getting on well with this crosscut. The lode in the 165 east is more open than it was, and letting out water freely. In the 150 east the lode has fallen off a little, and is now valued at 2 tons per fathom. The lode in the 130 east is compact and regular, with occasional stones of ore.

MILLS' DAY DAWN UNITED.—Mine manager's report for fortnight ending February 12: The small shaft on winze has been deepened 18 feet, and carries about 6 inches of stone. No. 7 level east extended a further 13 feet. The formation is nearly the full size of drive. In the stopes the reef varies from 2 to 4 feet thick of medium quality. In the No. 6 level west on the hanging wall section the reef is 2 feet 6 inches of good quality. On the footwall section the reef varies from 2 to 8 feet thick of fair quality. The level going east has been extended 5 feet, carrying 2 feet of reef. In the No. 6 level east the stopes carry from 2 to 6 feet of reef of fair quality. In No. 5 level west stopes the reef varies from 2 feet to 6 feet of fair quality. On the eastern level the reef in the stopes varies from 3 to 6 feet fair quality. In No. 5 level west the crosscut has been driven 14 feet. The No. 6 level footwall has been driven a further distance of 12 feet, and carries 2 feet of reef. No. 4 level west extended 12 feet, carrying 3 feet of reef of medium quality. In the stopes the reef varies from 3 to 8 feet medium quality. On the eastern side the reef ranges from 3 to 6 feet of medium quality. No. 8 winze west has been driven a further 30 feet. During the fortnight have baled water at the rate of eight hours per day of 24 hours. Stone raised 2065 tons.

MOUNT ZEEHAN (Tas.).—Manager writes for week ended February 20:—Argent section: Main engine shaft No. 6 lode, 72 feet level north, stope in back of level continued. Ore raised, 45 tons 12 cwts. fairly good seconds. At the 132 feet level the stope south of rise has been continued. Ore raised 73 tons 9 cwts., mostly low grade seconds. The main drive north has been extended 16 feet, total 184 feet. Ore raised 13 tons 13 cwts. medium quality seconds.—Frances lode: The 132 feet level south has been extended 4 feet, total 24 feet. Have met with a cross-branch in the forehead which is letting down a large feed of water. So far as seen it carries a good wall with usual dip. Prospect shaft on this lode has now been squared down to 17 feet, and a drain cut to carry off surface water. A further assay of galena from this shaft gave 74½ per cent. of lead and 119½ ounces silver per ton. Concentrator has been run 42 hours, and has milled 132 tons 14 cwts. seconds for 17 tons concentrates, containing about 12 tons 16 cwts. lead and 1189 ounces silver.

MOSMAN.—Mine manager's report for fortnight ending February 15: North Australian Mine: South Byerley level crosscut extended 12 feet, total from level to face 25 feet; the rock being passed through is very hard. South Byerley level winze has been deepened 16 feet, total depth 97 feet. The reef is 8 inches thick, worth, say, 2½ ounces per ton.—Stopes: The reef in the various stopes is from 4 inches to 2 feet thick, worth about 2 ounces per ton. Stone raised about 60 tons for the fortnight; total in paddock 200 tons.—Wyndham Mine: No. 13 level south extended 28 feet, total from shaft 55 feet. The reef which is well defined is 15 inches thick, worth about 1½ ounce per ton. No. 13 level north extended 29 feet, total from shaft 62 feet. In the present face there is no stone, but indications prove that stone is not far distant. Later: Stone has come in to-day fairly mineralised. No. 12 level winze deepened 25 feet, total depth 100 feet. The reef is 10 inches thick, worth about 1 ounce per ton. No. 8 level south extended 26 feet, total from crosscut 63 feet. The reef is 18 inches thick, worth say 1 ounce per ton. No. 8 level north extended 25 feet, total from crosscut 331 feet. There is no stone at present. Later: Stone has now come in 8 inches thick showing fair mineral. Stopes over No. 12 levels the reef is from 6 inches to 18 inches thick, worth say 16 to 18 dwts. per ton. Over No. 12 north level, and north of winze, the stone is about 15 inches thick, worth from 10 to 12 dwts. per ton. Over No. 11 level south of shaft about 6 inches to 18 inches thick, worth say 14 to 16 dwts. per ton. Over No. 9 south level from 6 inches to 2 feet thick, worth say 1½ ounce per ton.—Stone crushed: On the 10th inst 276 tons of stone from the Wyndham Mine yielded 273 ounces 13 dwts. 12 grains of gold.

MOUNT LYELL.—The London committee have received the following reports from the Melbourne board, viz.:—For week ending February 14: Engine Shaft: The western cross cut at the 100 feet level has been driven 7 feet, total 35 feet. The rock in the face is very hard quartzite, slightly mineralised. Engine shaft 50 feet level the western cross cut from the south chamber has been driven 4 feet, total 12 feet. At this point the main body of pyrites was intersected. We are opening out preparatory to stoping southern extension of ore shoot. The stopes on the ore body north of the shaft continue to furnish rich ore. The contractors have sunk No. 2 shaft 5 feet 6 inches, total 81 feet. There is no change to report. The rock is still hard and the inflow of water slightly on the increase. The contractors have driven No. 5 tunnel 32 feet, total 250 feet. This completes the first section. The country is still tough and progress slow. Good progress is being made by the contractor with the new road; 100 chains are cleared and grubbed, 80 chains formed, and 27 chains of corduroy laid.—Ore dispatched for week: The packers have taken away 262 bags of ore, weighing 13 tons 2 cwts., and containing 24,620 ounces of silver.—Output for week: 209 bags of ore weighing 9 tons 14 cwts. 3 qrs., and containing 21,812 ounces of silver, have been raised, averaging 2240 ounces of silver and 27 per cent. copper.

— For week ending February 21: Engine Shaft: The western cross cut at the 100 feet level has been driven 3 feet, total 38 feet. The rock in the face is even harder than last week, and contains small veins of fahlore, assaying as high as 400 ounces in silver. At the engine in the 50 feet level we have to-day commenced to drive south from the western cross cut along a small leader, which shows occasional particles of high grade ore. The stopes at this level show no change since last week. No. 2 shaft sunk 3 feet, total 84 feet. The rock is becoming very hard, otherwise no change. The contractors have driven No. 2 tunnel 20 feet, total 270 feet. The ground, which was rather hard at the commencement of the week, is now fairly easy. The new road work continues to proceed satisfactorily; 109 chains are cleared, 95 chains are formed, and 33 chains are cor-

duroyed.—Ore dispatched for week: 244 bags of ore have been dispatched, containing 21,855 ounces of silver, and weighing 11 tons 10 cwts. 3 qrs. 27 lbs.—Output for week: About 10 tons of ore have been raised, but are not yet bagged or sampled.

NEW QUEEN.—The following fortnightly report has been received from the mine, dated Charters Towers, February 16:—Stoping has been continued over the No. 4 south level, the formation varying from 1 to 10 feet. The reef is very irregular, from 3 inches to 1 foot. A large amount of mullock requires to be drawn from this stope. No. 5 south level has been extended a further distance of 15 feet, making a distance of 173 feet from underlie shaft. The formation in end of this level is about 8 feet in width, with about 8 inches of reef on the footwall. Stoping has also been carried on over this level. The reef is very bunchy, from a small leader to 8 inches. No. 5 level north has been extended a further distance of 10 feet, making it 106 feet from underlie shaft. No improvement has taken place during the fortnight, several leaders have come in, but nothing of a permanent nature. The ground is hard and very dry. A little stoping has also been done over this level. The reef is small, about 4 inches. In No. 4 formation the drive from the straight shaft has been extended a further distance of 24 feet, making a distance of 54 feet from the shaft. This level carries a reef varying from 6 to 9 inches. Operations in the stopes have been principally confined in rising up to intersect the level from bottom of straight shaft, and very good work has been done during the fortnight, the progress being so satisfactory that I expect to hole to-morrow. This connection should greatly improve the ventilation. —Quantity of stuff raised during fortnight: No. 4 level south, 213 trucks; No. 5 level south, 170 trucks; No. 4 formation, 70 trucks = 453 trucks. Approximate 325 tons quartz.—(Signed) W. Henderson.

OOREGUM.—Superintendent's report for fortnight ending 13th March: Taylor's shaft has been sunk 6 feet 3 inches; total depth below the 460 feet level 55 feet. Lode 1 foot 3 inches, value 2 ounces 14 dwts. 10 grains per ton. The 460 feet level south has been advanced 32 feet, total 159 feet 6 inches. Lode 2 feet 9 inches, value 10 dwts. 21 grains. 360 feet level south advanced 2 feet 3 inches, total 535 feet 6 inches. Lode 9 inches. No sample. This end, which is up close to the southern boundary, has been suspended. No. 3 winze 360 feet level south sunk 3 feet, total 48 feet 3 inches. Lode 3 feet, value 1 ounce 17 grains. No. 4 rise 280 feet level south 3 feet 3 inches risen, total 63 feet 3 inches. Lode 1 foot 9 inches, value 3 ounces 6 dwts. 10 grains. Wallroth's shaft sunk 17 feet, total 806 feet 9 inches. Lode 2 feet 6 inches, value 17 dwts. 10 grains. 760 feet level south advanced 28 feet 3 inches, total 65 feet 9 inches Lode 3 feet, value 13 dwts. 2 grains. 760 feet level north advanced 9 feet 9 inches, total 46 feet 9 inches. Lode 1 foot, value 18 dwts. 12 grains. 660 feet level south advanced 31 feet 9 inches, total 408 feet 9 inches. Lode 1 foot 6 inches, value 1 ounce 17 grains. No. 1 winze 660 feet level south sunk 3 feet, total 41 feet 6 inches. Lode 1 foot 6 inches, value 1 ounce 1 dwt. 19 grains. No. 2 winze same level sunk 3 feet 6 inches, total 17 feet 6 inches. Lode 1 foot 6 inches, value 12 dwts. No. 1 winze 660 feet level north sunk 3 feet 3 inches, total 34 feet. Lode 4 feet, value 2 ounces 18 dwts. 12 grains. 560 feet level south advanced 23 feet, total 786 feet 3 inches. Lode 1 foot 9 inches, value 1 ounce 1 dwt. 19 grains. No. 2 winze 560 feet level south sunk 1 foot 6 inches, total 50 feet 6 inches. Lode 9 inches, value 1 ounce 22 grains. No. 4 winze same level sunk 1 foot, total 45 feet 9 inches. Lode 6 inches, value 1 ounce 2 dwts. 21 grains. No. 5 winze sunk 6 feet 6 inches, total 32 feet 3 inches. Lode 3 feet 6 inches, value 2 ounces 3 dwts. 13 grains. No. 6 winze sunk 10 feet, total 25 feet 6 inches. Lode 2 feet, value 19 dwts. 15 grains. No. 3 winze 460 feet level south sunk 4 feet 3 inches, total 29 feet 9 inches. Lode 6 inches, value 3 ounces 5 dwts. 8 grains. No. 5 winze same level sunk 6 feet 6 inches, total 94 feet 3 inches. Lode 3 feet 6 inches, value 1 ounce 12 dwts. 16 grains. Now communicated with 560 feet level south. No. 6 winze sunk 5 feet, total 65 feet. Lode 3 feet, value 2 ounces 5 dwts. 17 grains. No. 7 winze sunk 6 feet 6 inches, total 60 feet. Lode 2 feet 8 inches, value 2 ounces 6 grains. Level south east on apparent gold from 215 feet level north advanced 16 feet 6 inches, total 58 feet. Lode 1 foot 6 inches, value 4 ounces 12 dwts. 16 grains. In this end we have again intersected old workings, and from what we can at present see the lode has made a turn north, but until we have cleared the old workings we cannot state definitely what has happened, but the indications up to now confirm the opinion that we have previously expressed that it is a fold on which we have been driving, and that the lode will make farther north. Low's shaft has been sunk 5 feet 6 inches, total depth 547 feet 10 inches. 510 feet level south advanced 6 feet 3 inches, total 92 feet. No lode. Cross cut west 510 feet level south advanced 3 feet, total 12 feet 6 inches. This cross cut has not yet discovered any more lode, but we propose to continue it further. The branch cut through in the cross cut and reported in the last report as 10 inches wide, assays 10 dwts. 20 grains per ton. Probyn's shaft, 950 feet level south, advanced 11 feet 6 inches, total 45 feet 6 inches. No lode. We shall commence a cross cut west forthwith. From the position of the cross course we ought to find the lode in that direction. No. 1 winze, 950 feet level north, sunk 5 feet 6 inches, total 8 feet 6 inches. Lode 1 foot, value 1 ounce 12 grains. 850 feet level south advanced 11 feet, total 184 feet 9 inches. Lode 6 inches, assaying 5 dwts. 10 grains. No. 1 winze, 850 feet level south, sunk 5 feet, total 21 feet. Lode 2 feet 6 inches, assaying 4 dwts. 8 grains. No. 1 rise, 850 feet level south, 7 feet risen, total 17 feet 6 inches. Lode 1 foot 6 inches, value 10 dwts. 21 grains. No. 2 winze, 650 feet level south, sunk 3 feet 3 inches, total 44 feet 9 inches. No lode. Stopes for the month: Taylor's shaft: Back 360 feet level south stoped 41 fathoms. Lode 6 feet 9 inches, value 1 ounce 10 dwts. 13 grains. Bottom 280 feet level south stoped 83½ fathoms. Lode 7 feet, value 14 dwts. 10 grains. Bottom 150 feet level north stoped 6½ fathoms. Lode 1 foot 6 inches, value 2 ounces 6 grains. Back 150 feet level north stoped 18½ fathoms. Lode 1 foot 10 inches, value 1 ounce 4 dwts. 12 grains. Wallroth's Shaft: Back of 560 feet level south stoped 5¾ fathoms. Lode 3 feet 3 inches, valued 1 ounce 8 dwts. 7 grains. Bottom of 560 feet level north cut 6½ fathoms. Lode 2 feet 3 inches, value 3 ounces 6 dwts. 3 grains. Bottom 460 feet level north stoped 5 fathoms. Lode 1 foot 9 inches, value 3 ounces 6 dwts. 4 grains. Boltom 360 feet levelsouth stoped 49½ fathoms. Lode 2 feet 6 inches, value 2 ounces 5 dwts. Back 360 feet level south stoped 1½ fathom. Lode 1 foot 3 inches, value 2 ounces 6 grains. Bottom 360 feet level north stoped 2 fathoms. Lode 2 feet, value 2 ounces 10 dwts. 2 grains. Bottom 280 feet level south cut 25½ fathoms. Lode 2 feet 9 inches, value 1 ounce 13 dwts. 9 grains. Bottom 280 feet level north stoped 4¾ fathoms. Lode 1 foot 6 inches, value 3 ounces 11 dwts. 1 grain. Bottom 215 feet level north stoped 10½ fathoms. Lode 1 foot 6 inches, value 3 ounces 1 dwt. 1 grain.—Low's Shaft: Bottom 430 feet level south stoped 4½ fathoms. Lode 1 foot 3 inches, value 1 ounce 12 dwts. 16 grains. Bottom 430 feet level north cut 4 fathoms. Lode 1 foot, value 2 ounces 5 dwts. 17 grains. Bottom 200 feet level north stoped 5¾ fathoms. Lode 1 foot 3 inches, value 12 dwts. Bottom intermediate level back 200 feet level south stoped 5½ fathoms. Lode 1 foot 6 inches, value 10 dwts.—Probyn's Shaft: Back 650 feet level south stoped 4½ fathoms. Lode 2 feet 9 inches, value 9 dwts. 3 grains. Bottom of 550 feet level south stoped 3¾ fathoms. Lode 3 feet, value 12 dwts. Back 550 feet level south stoped 2½ fathoms. Lode 1 foot 3 inches, value 14 dwts. 4 grains. Bottom 300 feet level south stoped 10 fathoms. Lode 1 foot 6 inches, value 2 ounces 6 dwts. 6 grains.—Exploratory Work, Wallroth's Shaft: Cross cut west from the 280 feet level south towards Munday's lode advanced 35 feet, total 252 feet.—Probyn's Shaft: Cross cut east from 450 feet level south advanced 29 feet, total 120 feet; no change. No. 2 trial shaft sunk 4 feet 6 inches, total 212 feet 6 inches. Lode 5 feet, value 1 ounce 7 grains.—New Machinery: No. 3 Walker's air compressor was started yesterday and works well. The erection of the engines for No. 3 tailings plant is well in advance, and we hope to start this machinery early next month. The engineer has commenced the erection of the engines for No. 3 mill, and this battery we hope to have ready for work some time in April.—February Return of Gold: The following are the particulars:—Quartz crushed 3087 tons, gold produced 5202 ounces, tailings treated 2943 tons, gold obtained 703 ounces; total return, 5905 ounces of gold.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

MR. SAMUEL JOHN DAVEY, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of April 5 (4 o'clock), as follows:—We have had a firm market most of the week, without much activity. To-day, however, market is easier. Following are quotations:—Blue Hills, 1s. to 3s.; Carn Brea, 11⅛ to 11¼; Cook's Kitchen, 1 to 1½; Dolcoath, 77½ to 80; East Pool, 10½ to 11; Killifreth, £3 14s. to £3 16s.; South Condurrow, ⅜ to ½; South Crofty, 3 to 3⅛; South Wheal Frances, 1½ to 1⅝; Tincroft, 12½ to 12¾; West Frances, 3 to 3½; West Kitty, 7¼ to 7½; Wheal Agar, 2¼ to 2½; Wheal Basset, 3 to 3½; Wheal Grenville, 14¼ to 14⅜; Wheal Kitty (St. Agnes), ⅝ to ¾; Polberro, ⅜ to ½.

Mr. MICHAEL WILLIAMS BAWDEN, Mining and Assaying Offices, Liskeard, Cornwall, writes (April 5) as follows:—The mining market continues firm for most shares, and prices are well maintained on the improvement in the standard, although the tin statistics for the past month show a considerable increase on stocks in hand. Dolcoath advanced £2, and West Frances £1 per share. The following are prices:—Carn Brea, 12½ to 12½; Cook's Kitchen, 1¼ to 1½; Dolcoath, 77½ to 78; Devon Consols, 1 to 1½; East Pool, 10⅜ to 11; Killifreth, 3⅝ to 3¾; Levant, 5 to 5½; Phœnix United Mines, ⅜ to ½; Polberro, ⅝ to ¾; South Condurrow, ¾ to 1; South Crofty, 2⅝ to 3; South Frances, 1¾ to 2; Tincroft, 12¾ to 13; West Frances, 2⅝ to 3, c.p.; West Kitty, 7½ to 7¾; Wheal Agar, 2¼ to 2½; Wheal Basset, 3⅛ to 3½; Wheal Friendly, 2s. 6d. to 3s.; Wheal Grenville, 14⅜ to 15; Wheal Kitty, 8s. 6d. to 10s.

Messrs. ABBOTT AND WICKETT, Stock and Share Brokers, and Mining Share Dealers, Redruth, write under date of Thursday April 5:—There has been a better demand for shares during the last week, consequent on the advance in tin, and a more hopeful feeling prevails. In some mines a substantial rise has been established. Tincrofts, West Frances, South Croftys, and Killifreths have been the favourite shares. Closing prices (four o'clock):—Carn Brea, 11¼ to 12; Cook's Kitchen, 1 to 1½; Dolcoath, 78 to 79; East Pool, 10⅜ to 11; Killifreth, 3⅝ to 3¾; Phœnix, ¼ to ½; Polberro, ⅝ to ¾; South Condurrow, ½ to 1; South Crofty, 3 to 3⅛; South Frances, 1½ to 2; Tincroft, 12⅝ to 12¾; West Frances, 2½ to 3; West Kitty, 7¼ to 7½; Wheal Agar, 2 to 2½; Wheal Basset, 3 to 3½; Wheal Friendly, 2s. to 4s.; Wheal Grenville, 14¼ to 14⅜; Wheal Kitty, ⅝ to ¾. Tin, 69⅜.

MANCHESTER.

Messrs. JOSEPH R. and W. P. BAINES, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write, April 5, 1894 (noon):—Markets, on the whole, have been fairly good during the greater part of the past week, but realisations have latterly detracted from best points. This later movement is, perhaps, most noticeable in the balances of alterations in home rails; but as to extent of relapse, in Americans. In home rails the changes for the week show declines in majority, the heavy lines being nearly all more or less distinctly lower. On the other side advances are fractional, ranging from about ⅛ in Brighton, A, to ¼ in Metropolitan District, with, however, a conspicuous exception in South Eastern, A, which mark rise of 2½. Canadians better all round, the February statement of the Grand Trunk, which showed a goodly saving in expenses, being a welcome surprise, and exerting a good influence on the prices of their issues. Pacifics, too, quote better (⅜). Americans are irregular, but changes are small, with the following exceptions—viz., Denver Preference $2½ and Norfolk and Western Preference $1½ higher, and Eries $1½ lower. Mexicans rails are unaltered, whilst their Preferences show—First Preference ⅜ up and Second Preference ¼ down. Consols are just the turn easier, quoting 1-16 lower, as compared with last week's figures. Colonial Government stocks, &c., very little altered, the only changes marked marked being advances of ¼ each in Cape of Good Hope Registered, ditto Inscribed, and Queensland Inscribed. In home corporation stocks, &c., too, the variations are few, but those few on the upward side—viz., Bradford Four per Cent. ⅜, Manchester Three per Cent. ½, and ditto 1941 ¼ higher. In foreigners the following are higher, viz.:—Portuguese Four per Cent. ⅜, Brazilian Four and a-half per Cent. 1, Italian Rentes ⅛, and Spanish ⅛, whilst Egyptian Unified are ⅜, Argentine Five per Cent. ⅛, and Uruguay Three and a-half per Cent. ¼ lower. Miscellaneous classes of shares, though producing only a very moderate number of transactions, show better prices in distinct majority in nearly all classes except, perhaps, the purely miscellaneous list. Amongst the last-named, a feeling of uneasiness has caused prices of both issues to recede, but at time of writing figures show a fair recovery from lowest points of the week. Rumours of a disquieting nature are rife, but they appear to be set about by bears, and a little decent buying quickly improves figures.

BANKS.—A fair number of dealings are reported in Consolidateds and Lancashire and Yorkshires, but beyond these business has been very desultory.—Higher: Parr's, &c., ⅛; Lancashire and Yorkshire, ⅜; Manchester and Salford, ⅛ to ¼. Lower: London and Midland, ⅛.

INSURANCE.—Transactions few, but changes in prices nearly all on the upward side.—Higher: Commercial Union, ⅛; Boiler Insurance, 3-16 to ¼; Reliance Marine, ⅛; Union Marine, ⅛; Lancashire, 1-16; Manchester Fire, 1-16; and Thames and Mersey, 1-10. Lower: National Boiler and General, ⅛; London and Lancashire, ⅛; and Royal, ⅛.

COAL, IRON, &C.—With the exception of Cammell's, which are ⅛ to 1½ up, prices, where altered, are easier. The following are lower, viz., Earles 2, Ebbw Vales, 1-16, Patent Nut and Bolt ⅛, and Whitworths ⅛ to ⅜.

MINES.—Only a trifling number of dealings here. Tintos are ⅛, and Burma Ruby 1-16 higher, whilst Great Laxey Lead are ⅛, Tharsis ⅛, and Consolidated Goldfields 1-16 lower.

COTTON SPINNING, &C.—Shares rule very dull, but prices (whilst very nominal) do not exhibit much quotable change. Recent disclosures of heavy losses, followed by another just announced in the Bury district, militate against the effect of some fairly good stocktakings for the past quarter, by engendering a feeling of uneasiness and consequent indisposition to act on what, in ordinary times, would impart some strength to tone in shares.

TELEGRAPHS.—Though no transactions are reported here, prices have a good record. Higher: Anglo-American ordinary 1½, ditto preferred 1, and deferred ⅛, Eastern ⅛, Eastern Extension ⅛, and Direct U.S. ⅛. Lower: Western and Brazilian ⅛.

BREWERIES.—Allsopps have been quieter, and mark a rise of ⅛ to 1 on the week, after fluctuations less spasmodic than of late, Guinness are 4 and Farnham ½ higher. Chesters ordinary are ⅛ down.

MISCELLANEOUS.—Ship Canals have produced a large number of transactions; Monday saw them at about the lowest of the week. A fair rally occurred yesterday, but it was not quite maintained this morning. Palace of Varieties have had a fairly sharp rise, and Salt Unions have declined 5-16ths. Other changes contradictory, and small in amount on either side.

LATER (4.0 P.M.)—Ship Canals have fluctuated in somewhat narrow limits during the day, and finish about ⅛ down since morning on the ordinary, and about 1-16th on the preference. Home Rails little doing, and inclined towards ease in prices, but Scotch stocks keep steady. American prices coming lower this morning; a similar movement is reflected here to-day, ruling dull to the close of business

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (April 5), writes:—During the past week the market has not been so active, and some realising has been going on. The feeling is still good owing to cheap money and improving trade, as confirmed by the issue of favourable Government Revenue returns.

In shares of coal, iron, and steel companies prices are generally lower. The Marbella output for March has been 670 tons. Bolckow Vaughan are at 12⅛; Ebbw Vale, 9; Marbella, 63s.; Niddrie 53s. 6d.; Steel Company of Scotland, 70s.; Stewart and Clydesdale, 8 5-16; Sheepbridge, B, 6¼; and Wilson and Clyde, 8¾.

In shares of copper concerns prices have improved in sympathy with the market for the metal. The upward tendency in the metal market is ascribed to symptoms of a revival in the demand for consumption in the United States. Tharsis have touched 99s. 6d.: Arizona, 7s. 3d.; and Tinto 15 15-16.

In shares of gold and silver mines a fair amount of business has been done. Montana remain at 6s. 3d. United African Land and Zwartland (Transvaal) Land shares offered. The following dividends have been announced:—City and Suburban, 25 per cent.; Langlangte Estates, 12½ per cent.; and Wolhuter, 10 per cent. African Gold Recovery are at 26s.; African Consolidated Land, 2s. 6d.; British South Africa Chartered, 36s.; Broken Hill Proprietary, 49s. 6d.; Bechuanaland Exploration, 26s.; Cassel, 17s. 6d.; Consolidated Gold Fields of South Africa, 50s. 9d.; Day Dawn P.C., 4s. 9d.; Frontino, 20s.: Golden Feather, 7s.; Harquhala, 18s.; Idaho, 1s. 9d.; Lisbon Berlyn, 3s. 3d.; May Consolidated, 11s. 9d.; New Virginia (Transvaal), 1s. 6d. to 2s.; Orita, 2s. 6d.; Pigg's Peak, 2s. 9d.; Sheba, 21s. 6d.; Sutherland Reefs, 6s.; and St. John del Rey, 23s. 9d.

In shares of miscellaneous companies there has been more business doing. In oil companies Broxburn are at 8⅜, Pumpherston 6¾, and Young's 27s. Nobel's Explosives have improved to 14 7-16ths; Field's Candle, 5½; Lawes' Chemical, 6⅝; London and Glasgow Engineering, 5½; Roburite Explosives, 31s. 3d.; and White Lead, 6s. 3d.

EDINBURGH.

Messrs. THOMAS MILLER and SONS, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of April 5:—There are few changes of any importance to report in Home Railways. Prices for the most part remain much the same as they were a week ago. Debenture, Guaranteed, and Preference stocks have found purchasers; but only a limited amount has come to market. Canadians better. British Linen Bank has improved from 379 to 380. Royal from 227 to 227⅞. Clydesdale from 20½ to 21½. Union from 21⅛ to 21⅞. Business in Insurance shares has been very quiet. Liverpool, London, and Globe have risen 5s. American Mortgage of Scotland, after falling from 37s. 9d. discount and 40s. discount, have recovered to 37s. 6d. discount. British South Africa have risen from 31s. 9d. to 35s. Edinburgh Investment Trust Deferred has fallen from 65 to 60. Scottish Trust and Loan of Ceylon have risen from 62s. 9d. to 65s. 6d. Niddrie and Benharo shares have fallen from 54s. 3d. to 53s. 6d. Wilson and Clyde have risen from 8 13-16 to 8¾. Oils very quiet. Assets 6d. lower at 49s. 6d. Barry Ostlere 2s. 6d. higher at 87½. Coat's 2s. 6d. lower at 163–16. Distillers 2s. higher at 15⅞. Eastman's 6s. lower at 73s.

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‡§Pretoria	—	April 8	April 14	April 21
†Moor	—	—	—	April 28
‡Greek	April 22	—	April 28	May 5

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THE OCCURRENCE OF PERLITIC CRACKS IN QUARTZ.

BY W. W. WATTS, M.A., F.G.S.

THE author of this communication, read before the Geological Society of London, described some specimens of the porphyritic pitchstone of Sandy Braes, in Antrim, which are deposited in the Museum of Science and Art, in Dublin, and in that of Practical Geology, in Jermyn-street. They exhibit admirable examples of perlitic structure in the brown glossy matrix, and the presence of polygonal, circumferential, and radial cracks is noticed. The porphyritic crystals of quartz are traversed by curved fissures of retreat, not so perfect as those found in the glass, but better than those usually produced by the rapid cooling of Canada balsam. The fissures in the quartz are frequently prolonged into the matrix, undergoing only a very slight and almost imperceptible deviation in direction at the junction. But, in addition to this, the quartz is often found to act as a centre of strain, the inner cracks of the perlite being wholly in quartz, the next traversing both, and the outer ones in glass only. In other examples, the outer cracks of a matrix perlite sometimes enter the quartz, while in others polygonal cracks occur, and join up in the quartz, and give off radial cracks precisely like those of the matrix. These observations lead to the conclusion that the quartz and glass must have contracted at about the same rate, and that the observation of perlitic structure in a rock with trachytic or felsitic matrix by no means proves that the rock is necessarily a devitrified glass. References are given to somewhat similar observations by Fouqué and Michel-Lévy, and by Iddings.

Discussion.

Mr. Rutley stated that the careful observations made by the author appeared to be quite satisfactory up to a certain point, although he should hesitate to describe the cracks in the quartz and olivine-crystals as perlitic. That perlitic structure and the structures seen in these crystals were both due to shrinkage there was no question. Spheroidal structure in basalt and other crystalline rocks also resulted from the same cause, yet the spheroidal structure of a basalt and the perlitic structure of an obsidian were sufficiently different to deserve different names. He had occasionally met with cracks in olivine-crystals similar to those exhibited, but he had never regarded them as perlitic. On the whole, he considered that the author had given the society an extremely interesting and valuable paper, but he did not agree with him in thinking, that the facts now brought forward were sufficient to invalidate conclusions hitherto formed, with regard to the once vitreous character of rocks showing perlitic structure. In the absence of this structure, it was not possible to say whether a felsite originally solidified as a lithoidal or as a vitreous rock, because, if originally vitreous, it might assume a lithoidal character through devitrification. Furthermore, if perlitic structure occurred in a lithoidal rhyolite, there was no means of proving that the rock was lithoidal when the perlitic structure was developed.

Mr. Harker thought the author had proved that true perlitic cracks may be formed in a mineral like quartz, possessing no marked cleavage. He compared the phenomena with those recorded in the Meissen pitchstone. There, according to Sauer, the generally peripheral arrangement of the cracks within the quartz-crystals indicated a greater contraction in the mineral than in the surrounding glass. In the rock now described, the frequent continuity of the cracks through glass and crystal alike pointed to a smaller difference between their respective coefficients of contraction.

Professor J. F. Blake also spoke.

The Author, in reply to Mr. Rutley and Professor Blake, pointed out that the perlites in quartz were of the same nature as those in the surrounding glass, that the two substances were often involved in the same perlite, but that the quartz cracks were often quite independent and frequently concentric. As the cracks traversed every structure in the rhyolites, including trichites and microlites, he felt no doubt that the felsitic structure was in this case original.

The Electric Light at Seaton Delaval Colliery.—The owners of Seaton Delaval Coal Company have made arrangements to introduce the electric light into their new colliery at Hartley. The necessary plant is now being laid down to supply both the heapstead, engine rooms, and workshops; also the underground workings, the stables, and extensive haulage machinery and tramways, which are several miles in length, to the coal face. Seaton Delaval Colliery was one of the first in the United Kingdom to manufacture its own gas. The gas works erected 40 years ago are now found to be inadequate for the proper supply of light needed at the old colliery and the branch at New Hartley.

The Nitrate Market.—Mr. Thomson Aikman, jun., reports:—Since report of 27th ult., the approximate sailings in March for Europe are advised as 36,000 tons, against 65,000 tons last year, while the loadings are 55,000 tons, against 75,000 last year. These figures make the quantity afloat at March 31, 220,000 tons (including 44,000 tons between ports of call and discharge), against 200,000 tons at the same date last year. The comparative statistics show a consumption, during first quarter, of 86,000 tons over last year, a supply in sight considerably smaller than at same period during the past four years, and less than the deliveries from April to July during same years. With only about 15,000 tons further arrivals during the week, prices have again hardened, a large business having taken place; due steamer cargo at 9s. 9d.; off coast sailings at up to 9s. 10½d.; due sailings 9s. 6½d. to 9s. 7½d.; February sailings 9s. 1½d. to 8s. 11½d.; March, 8s. 9d.; April, 8s. 7½d. to 8s. 9d.; and August to October sailings at 8s. 9d. to 9s. per cwt. Cost of nitrate, f.o.b., is now quoted 5s. 11d. to 6s. 2d. per quintal, exchange 13½d., and freights firm at 27s. 6d., with 23,000 tons register disengaged spot tonnage.

Cumberland Colliers.—The Cumberland colliers have declined to accede to the request of the coalowners for a reduction of 10 per cent. in wages. The delegates put the matter before the lodges of the Cumberland Miners' Association in connection with each pit. A few lodges decided in favour of a ballot being taken on the question, but the great majority considered a ballot unnecessary, and declared they would accept no reduction whatever.

West Australian Gold Fields (Limited).—We are informed that this company has secured the Mawson's Reward Claim, which was granted by the West Australian Government as a reward to Mr. Mawson for the discovery of the Dundas Fields, in the same manner that Bayley's Reward Claim was granted to Mr. Bayley as a reward for the discovery of Coolgardie. A separate company is to be formed to work the claim, with a capital of £60,000, and the shares will be issued at 5s. premium.

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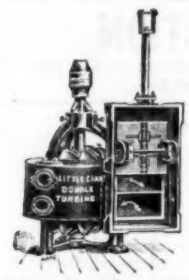
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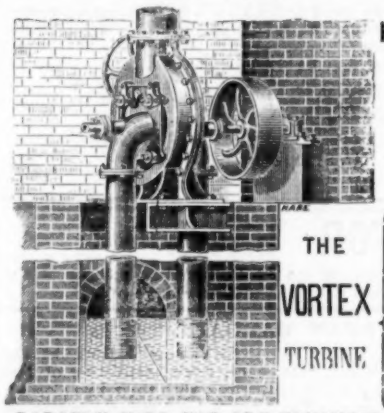
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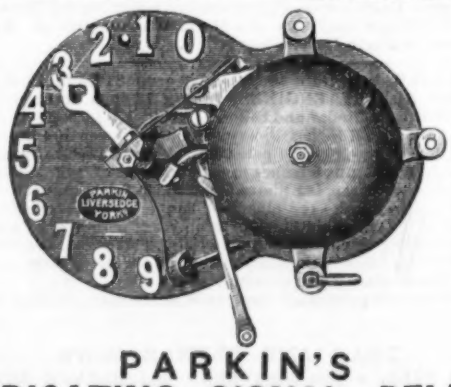
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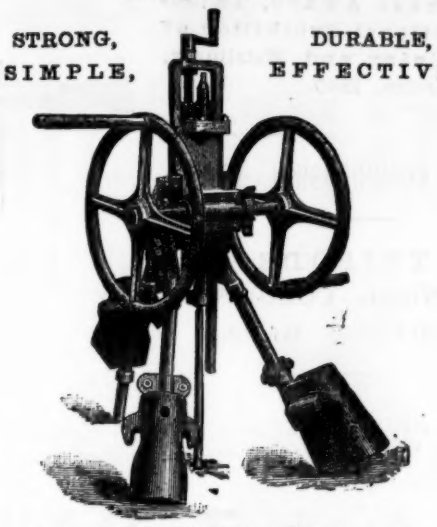

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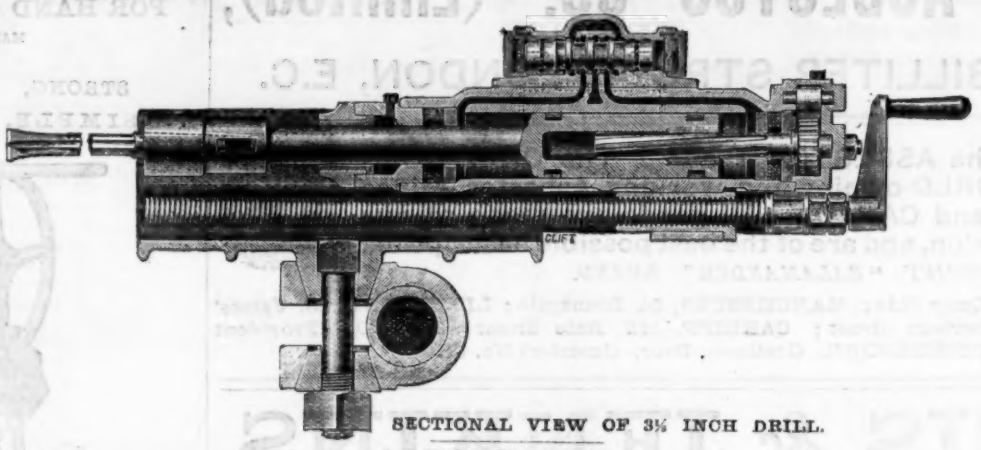

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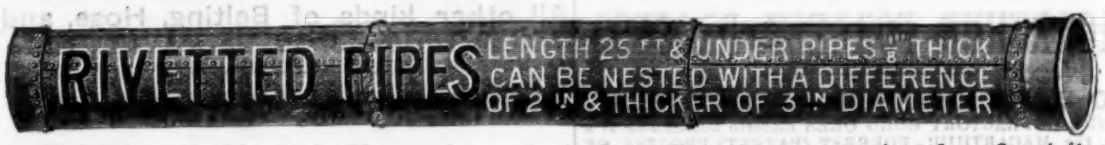

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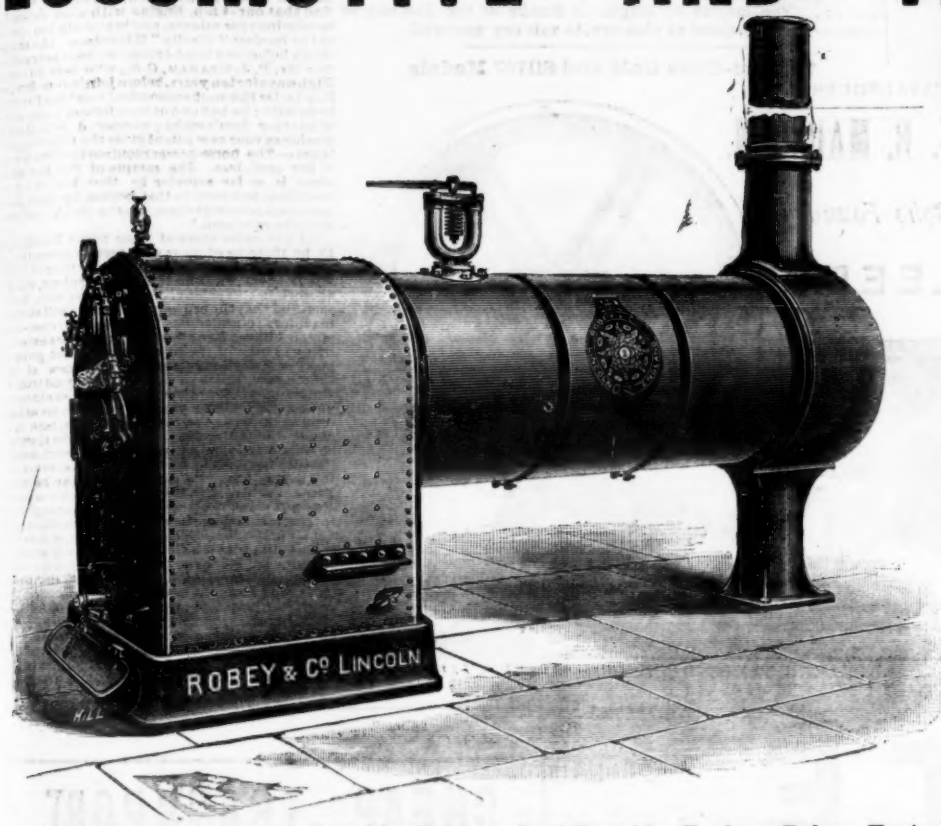

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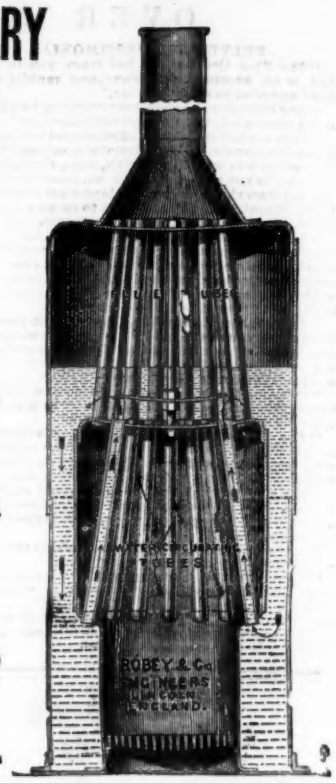

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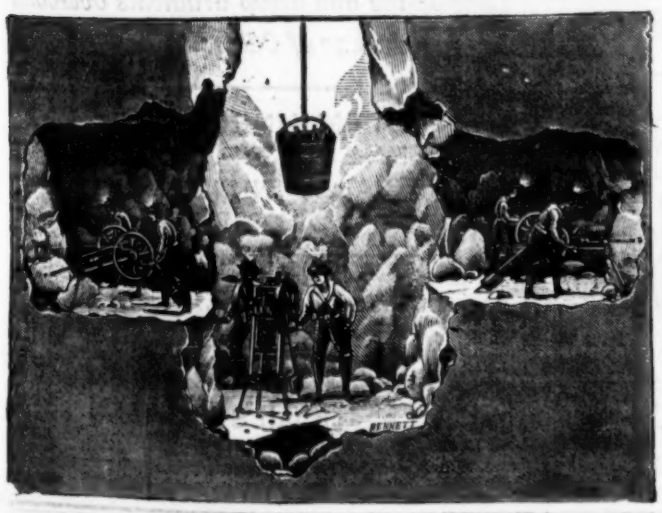

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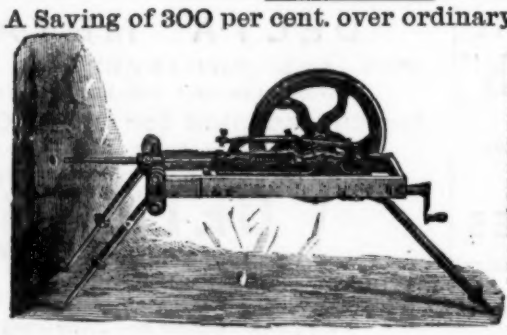
THE PELTON WATER WHEEL CO.'s MOTORS.

A Marvel of Energy and Power.

A Saving of 300 per cent. over ordinary Hand Labour



No. 1 DRILL.

It is perfectly automatic, and bores holes from ¾ to 2½ inches diameter at the rate of 1 to 2 ins. per minute in hard rock. It will work equally well in any direction, or on any uneven surface. No skilled labour required to run it. No expensive repairs. Made in 2 sizes, and can be worked by electric motor if desired. Hundreds of them are at work in all parts of the world in mines, quarries, and all kinds of rock-excavating.

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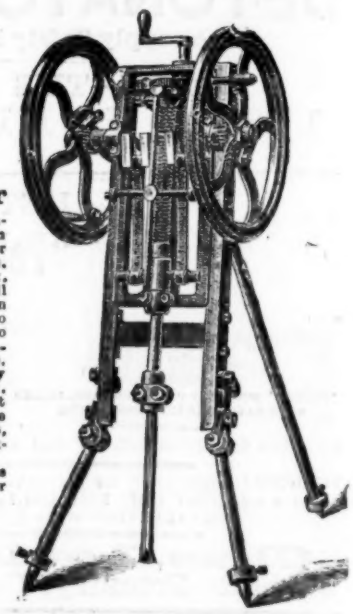

DRILL No. 2.

SEND FOR FULL DESCRIPTION, PRICES, &c., TO

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SAFETY BLASTING IN COAL AND SHALE, ETC.

SETTLE'S Patent GELATINE WATER-CARTRIDGE

NOBEL'S EXPLOSIVES COMPANY (Limited), Glasgow, having acquired from Mr. Miles Settle the Sole Patent Rights of his Water-Cartridge System of Blasting have now arranged to supply through their local Agents all the Appliances required in connection therewith.

ADVANTAGES OF USING SETTLE'S PATENT GELATINE WATER-CARTRIDGE:

1.—SAFETY IN BLASTING. 2.—NO SMOKE. 3.—NO SPARK OR FLAME. 4.—NO FUMES. 5.—ALL COAL GOTTEN IN LUMPY CONDITION AND WITH A MUCH SMALLER PERCENTAGE OF SLACK THAN IN BLASTING WITH POWDER. 6.—GREAT SAVING OF COST OWING TO MORE EFFICIENT BLASTING, AND TO REDUCTION OF MANUAL LABOUR. 7.—SIMPLICITY OF THIS METHOD OF BLASTING.

Trained Experts will carry out experiments, and instruct Colliery Managers, Miners, &c., FREE OF CHARGE, on application to Nobel's Explosives Company (Limited), Glasgow, or to their Consulting Engineer.

The use of the WATER-CARTRIDGE is recommended by the Royal Commission on Accidents in Mines.

For full information apply to **NOBEL'S EXPLOSIVES COMPANY** (LIMITED), GLASGOW, or to H. ENFIELD TAYLOR, M.Inst.C.E., the Company's Consulting Engineer, 15, Newgate Street, Chester.

MANUFACTURERS OF GELATINE-DYNAMITE, DYNAMITE, DETONATORS, ETC, ETC.

Awarded the ONLY Gold Medal for Stonebreaker at the International Inventions Exhibition, in competition with all other makes.

THE BLAKE-MARSDEN 1884 Patent

Lever Hand-Hammer Action Stonebreakers and Ore Crushers,

NEW PATENT FINE CRUSHER OR PULVERIZER.

Fitted with Patent Reversible Cubing and Crushing Jaws in Five Sections, and with Surfaced Rocks, requiring no White Metal in fixing. Crucible Cast Steel Levers and Toggle Cushions, Brass or Gun Metal Bearings throughout.

Positive Draw Back Motion taking no power to work, and entirely dispensing with the old expensive Steel Embedded I.B. Spring. The motion or length of Stroke of the Jaw can be increased or decreased at pleasure, to suit any material.

OVER **5000** IN USE.

70 First-Class Gold and Silver Medals.

CATALOGUES FREE.

H. R. MARSDEN.

Soho Foundry,

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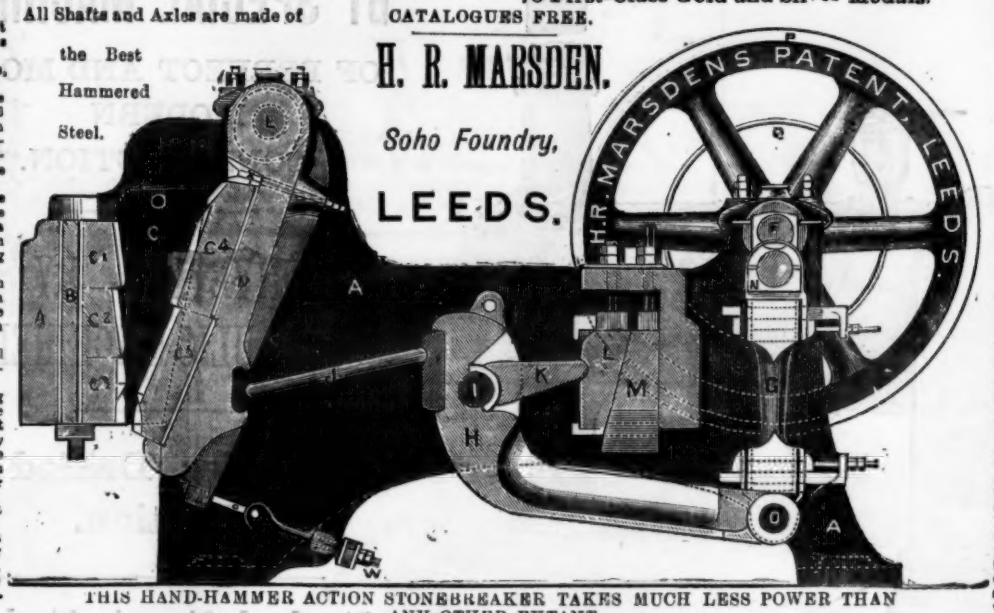
All Shafts and Axles are made of the Best Hammered Steel.



THIS HAND-HAMMER ACTION STONEBREAKER TAKES MUCH LESS POWER THAN ANY OTHER EXTANT.

PULVERIZER TESTIMONIAL

"The Fine Crusher we had from you in August last is an excellent pulverizer, and rapidly reduces hard material to a fine powder."

"The Pulverizer has now been working two months, and answers its purpose most satisfactorily."

"It is with the greatest satisfaction that we write these few lines in order to acquaint you that the 12×3 Pulverizer you provided us with, has quite fully given the results you represented to us, completely reducing our material to an impalpable powder at one operation. Should you refer any one to us we should have much pleasure in recommending the machine."

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12×3 Pulverizer we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverizing that we have ever met with"

"The reports from our mines as regards the working of your Fine Crusher (20×5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried by hand, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might say how long you would take to deliver another of the same size."

"As I once before stated, your machine is a perfect pulverizer."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam, and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

STONEBREAKERS AND ORE CRUSHERS. TESTIMONIALS.

"We have great pleasure in testifying to the efficiency of the 15 in. by 8 in Lever Hand Hammer Motion Stone Breaker you supplied us with. We find that our 4 h-p. Engine with ease drives it 250 revolutions per minute, and breaks six ton per hour of the hardest "Diorite" Whinstone the sample is much before any hand-broken we have ever got done. Our Mr. P. J. Graham, C.E., who was Surveyor of Highways for ten years, before joining our firm, says: It is by far the most economical machine he ever had to do with; he had two of your former make, and two of another firm's make; compared with these four machines your new patent gives the following advantages:—The horse-power required to drive is exactly 40 per cent. less. The sample of the broken macadam is so far superior to that broken by other machines, and even to that broken by hand that we can make no comparison. I is by far the best sample we have ever seen."

"I now order three of your Stone Crushers, size 15 by 10, to be of your very best construction, and to include two extra sets of Jaws and Cheeks for each. The last two 24×13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference of the high character of your constructions you can refer to me as having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible; I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased seven from you at various intervals and various sizes, and two above 12 years ago, and having tried all the other makers is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."

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IS RECOMMENDED TO CONTRACTORS, MINERS, PIT SINKERS, QUARRYMEN, AND OTHERS, AS BEING THE SAFEST OF ALL EXPLOSIVES.

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Also supply Safety Fuse and Electric Firing Appliances of best description.

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IMPROVED AERIAL WIRE ROPEWAYS

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A SYSTEM UNEQUALLED FOR CHEAPNESS OF TRANSPORT, ESPECIALLY IN MOUNTAINOUS DISTRICTS.

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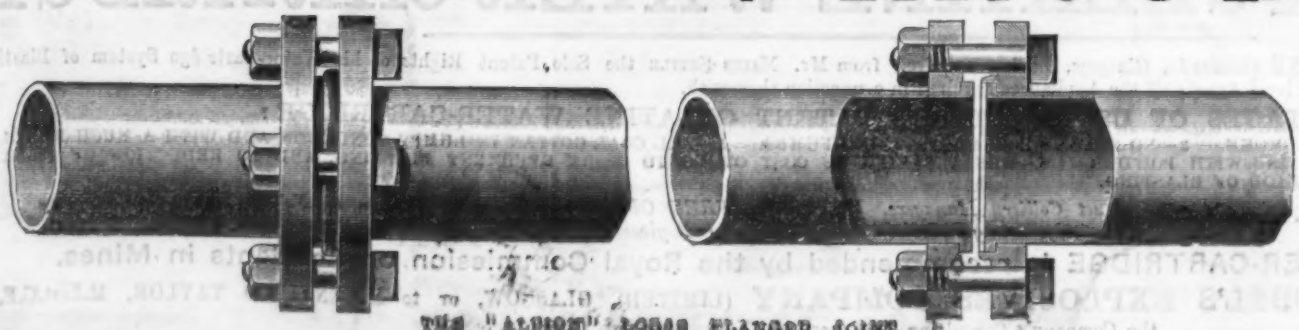

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